Pharmacognosy Department
and
Drug Discovery Unit

قسم العقاقير
و
وحدة الإكتشافات الدوائية

# Mansoura University

# Faculty of Pharmacy

# Pharmacognosy Department

# Practical Course “CD-1”

# Term 1

# 1-seeds

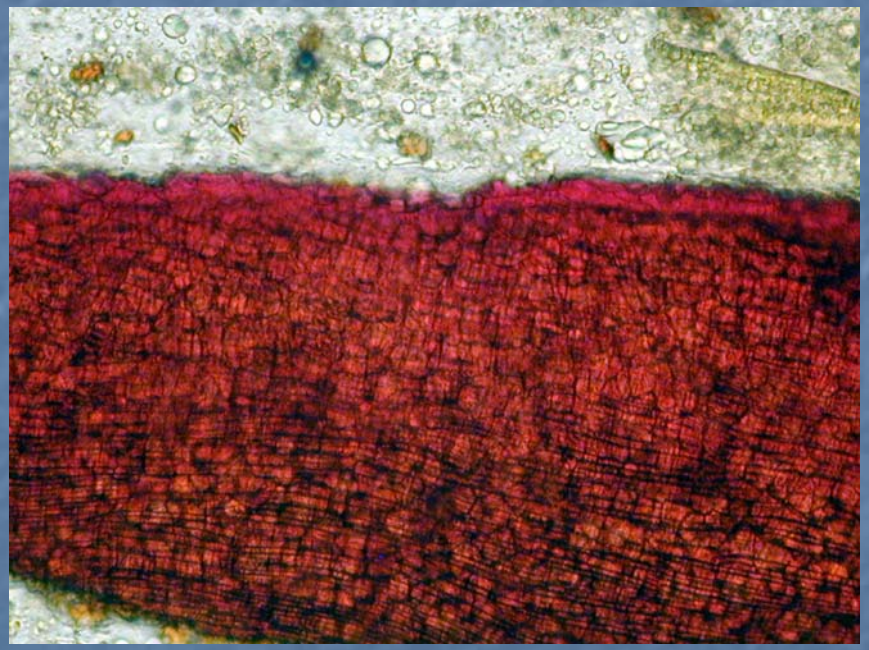
# *Linseed*

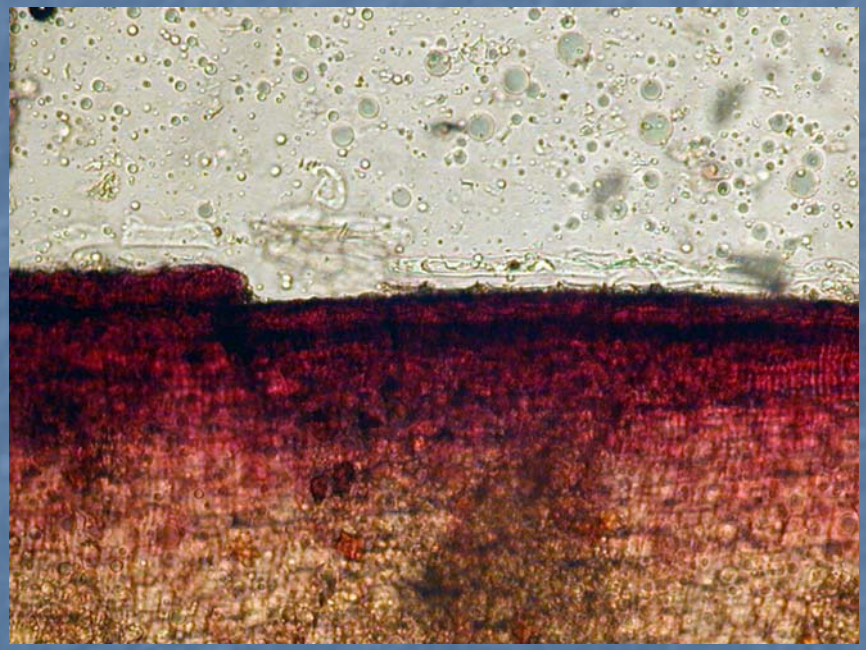
**Hilum & micropyle**

**raphe**

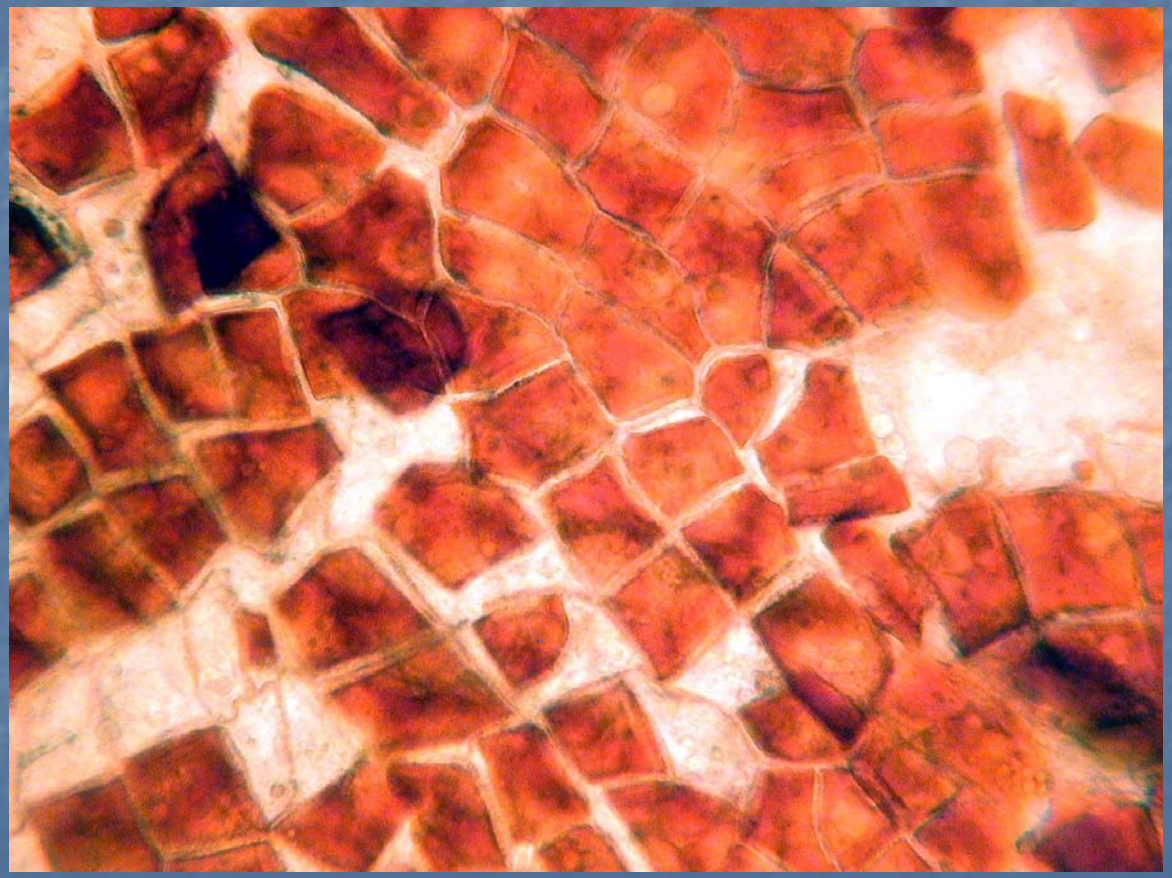
# T.S in Linseed

# Sclerids of linseed





# Pigment layer of Linseed



# *Nux vomica*

# T.S in Nux vomica

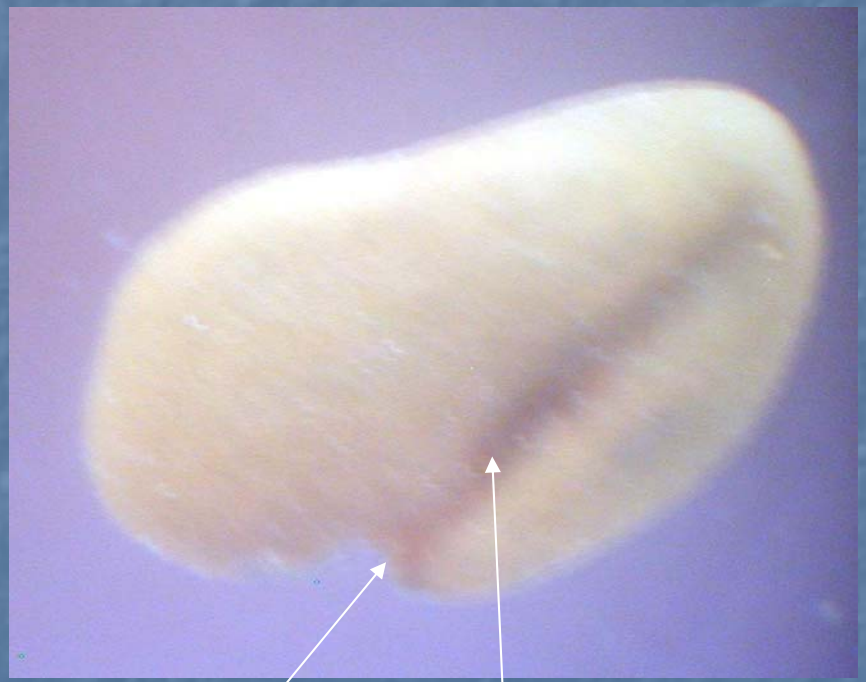
Epidermal sclerids

Hyaline layer

Endosperm (hemicellulose)

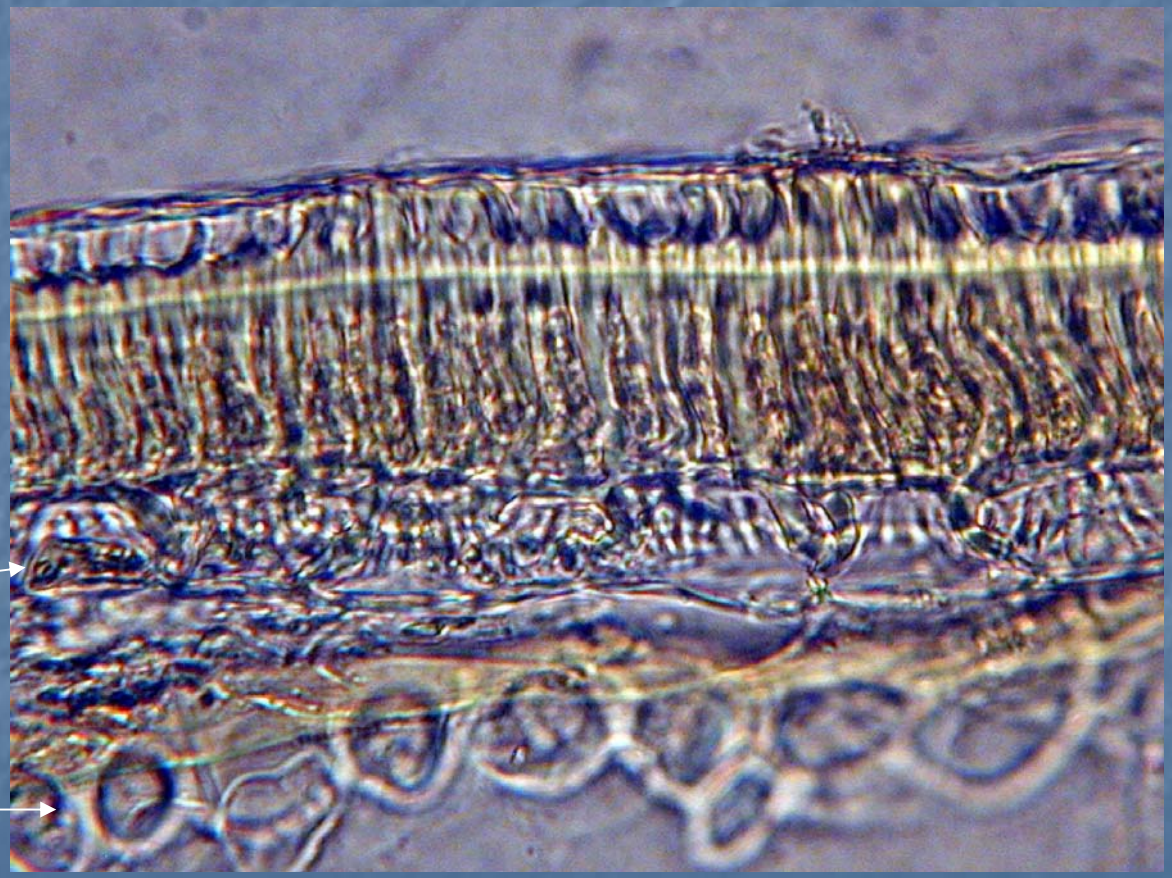
# Epidermal sclerids

# Foenugreek seed



# T.Cut in foenugreek showing Accumbent embryo

# T.S in foenugreek

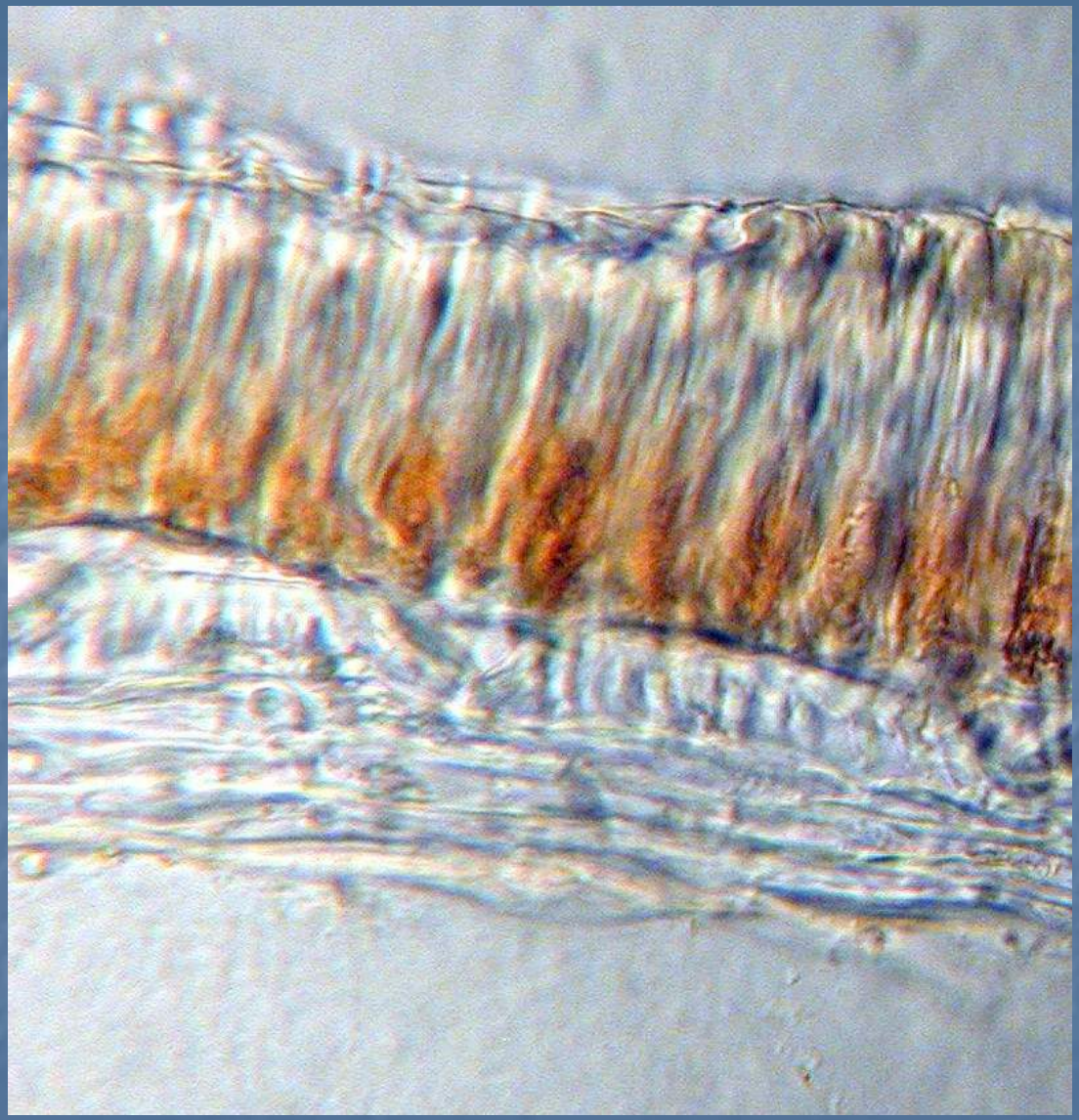


cuticle

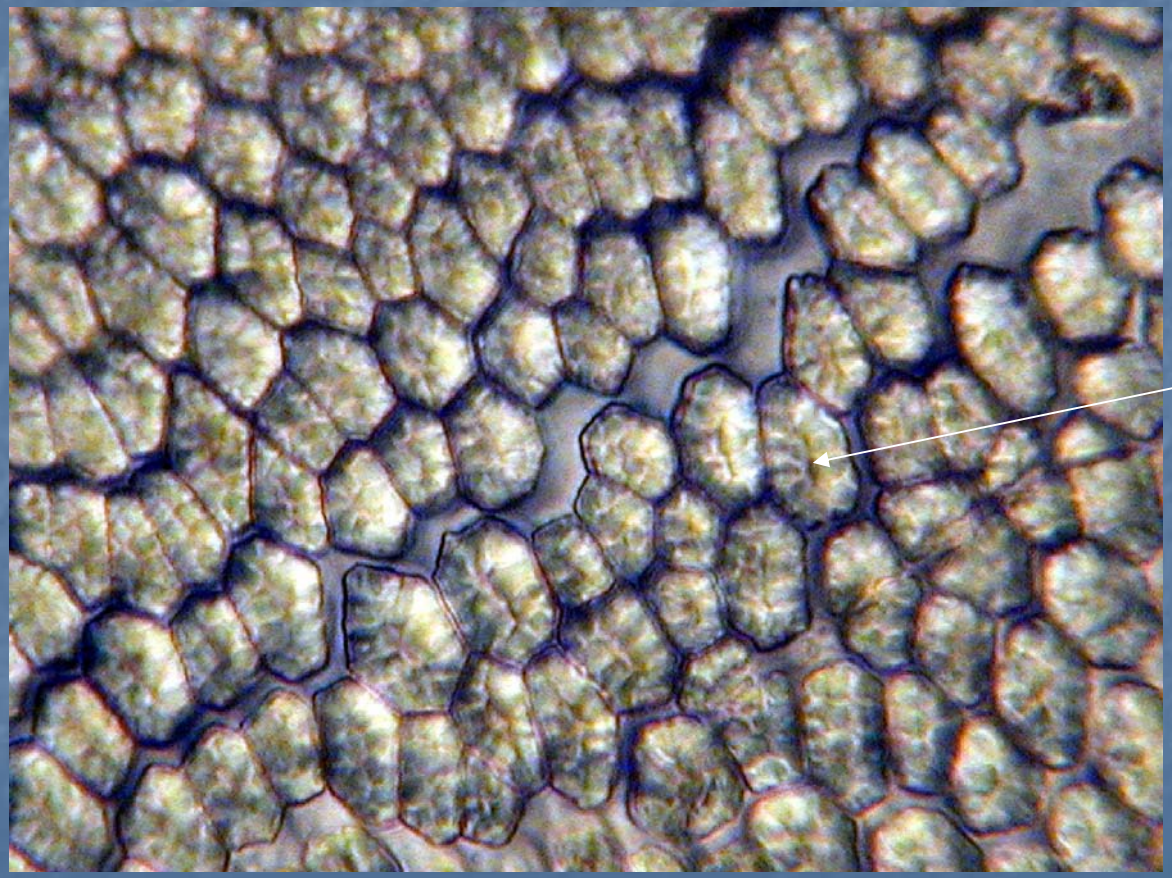
Epidermis (Palisade-like cells)

Hypodermis (basket-cells)

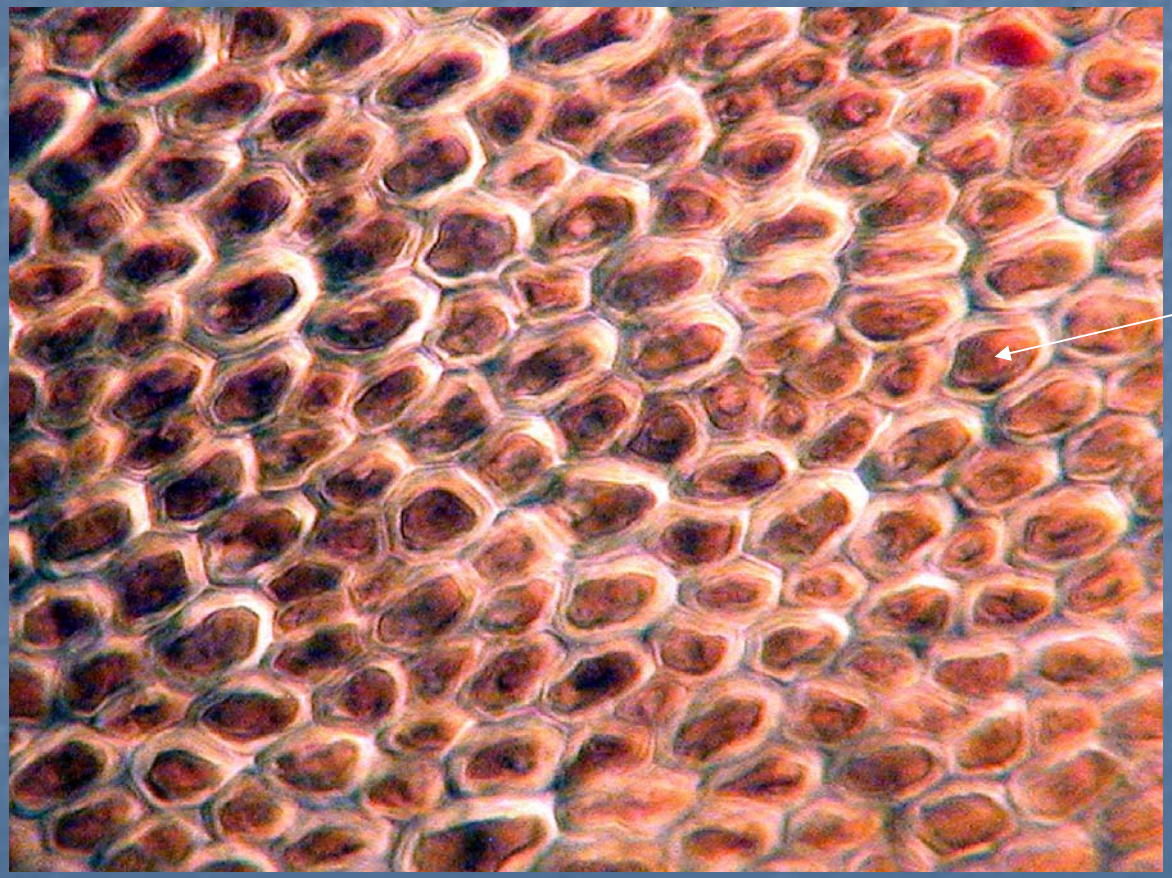
Outermost layer of endosperm



# Palisade cells top view

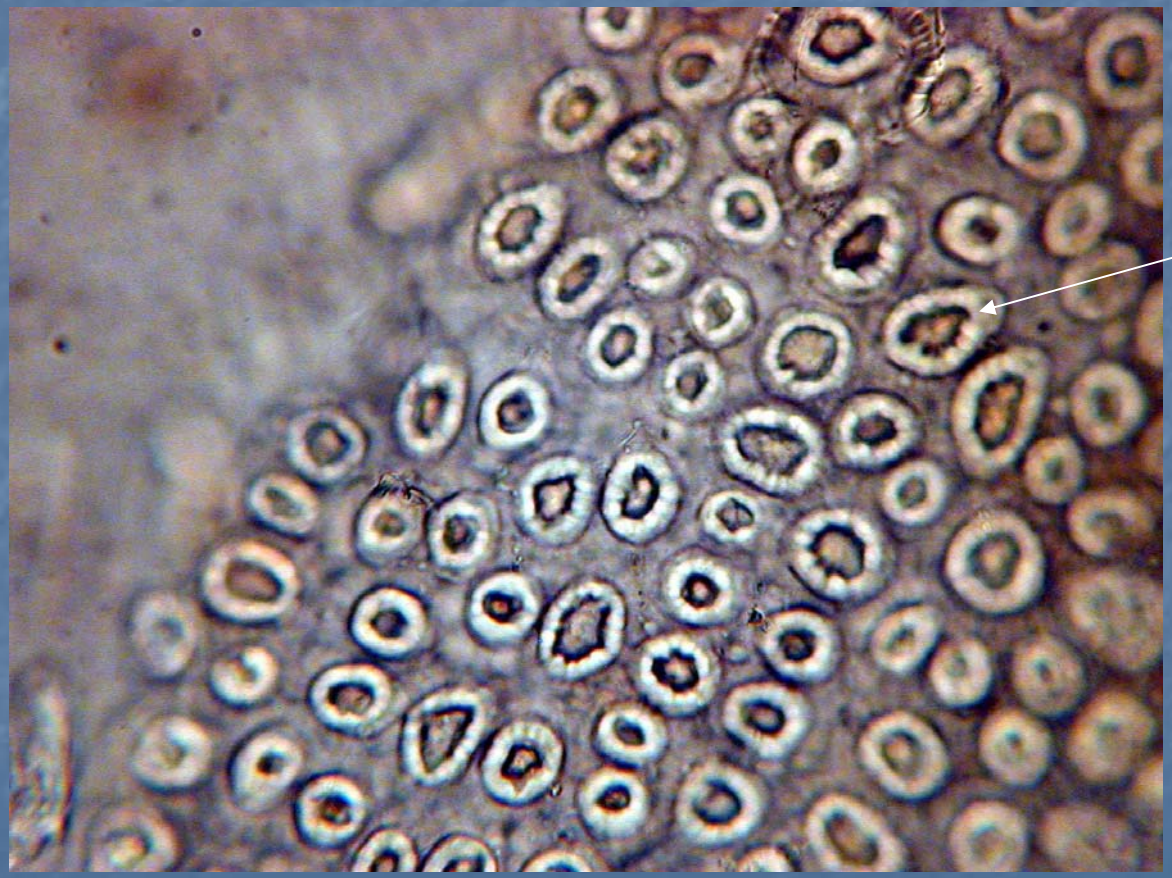


# Palisade cells basal view



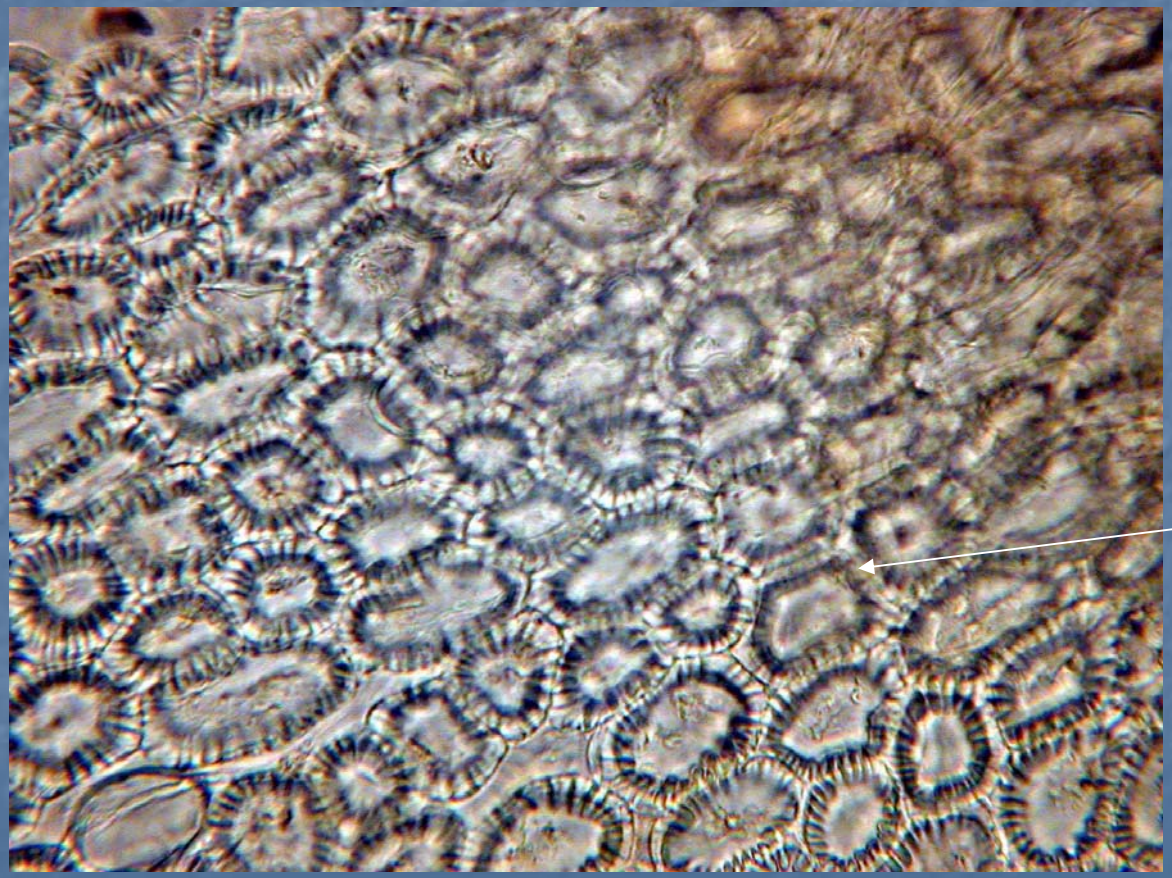
Wide lumen

# Hypodermis (basket cells) top view



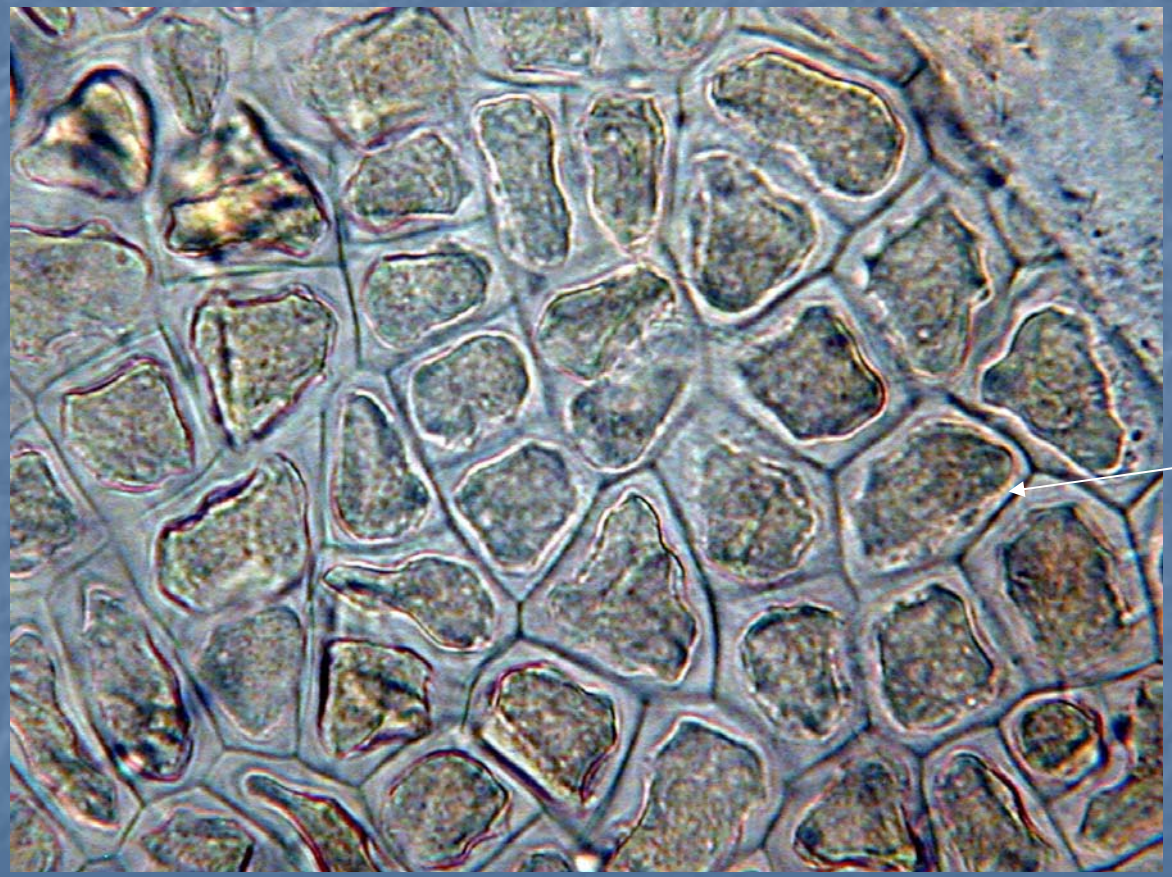
**Rounded outline**

# Hypodermis (basket cells) basal view



**Polygonal outline**

# Outermost layer of endosperm



**Collenchymatous thickening**

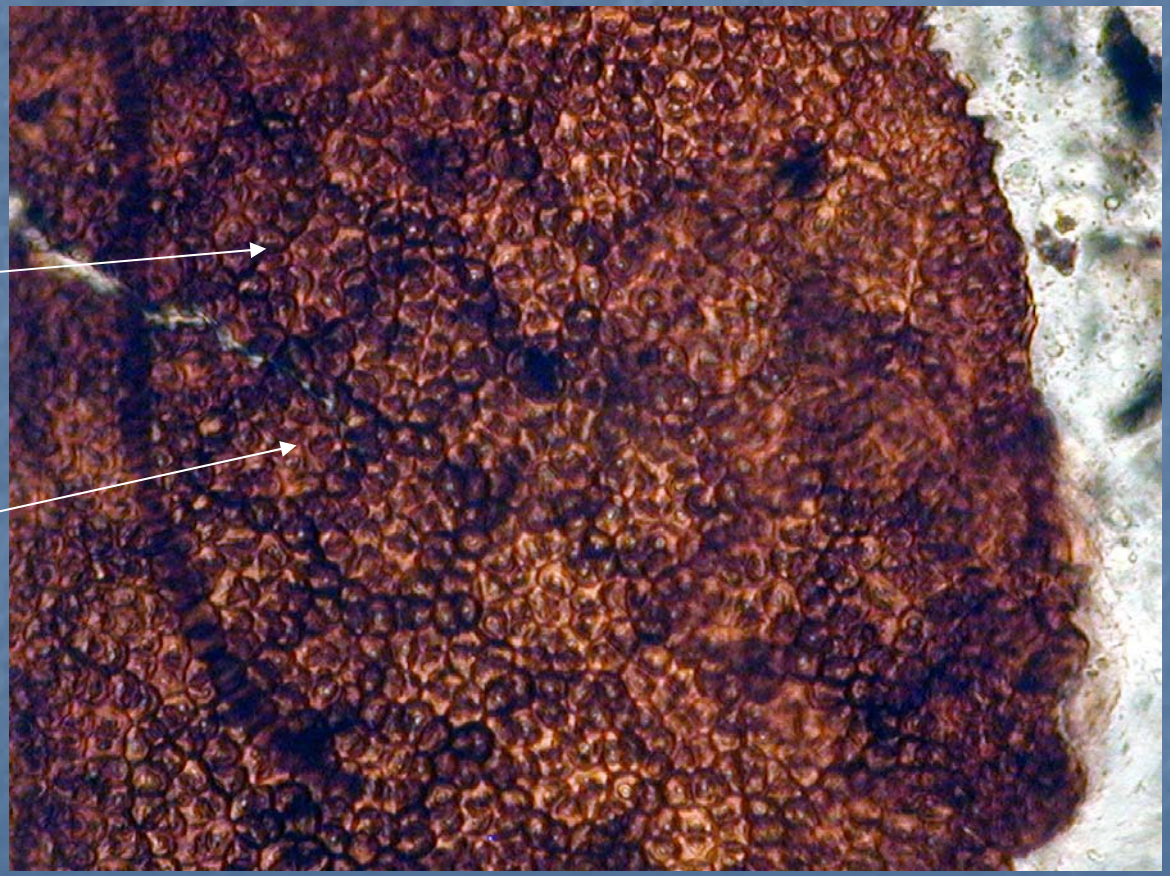
# Black mustard seed

# Orthoplocus embryo

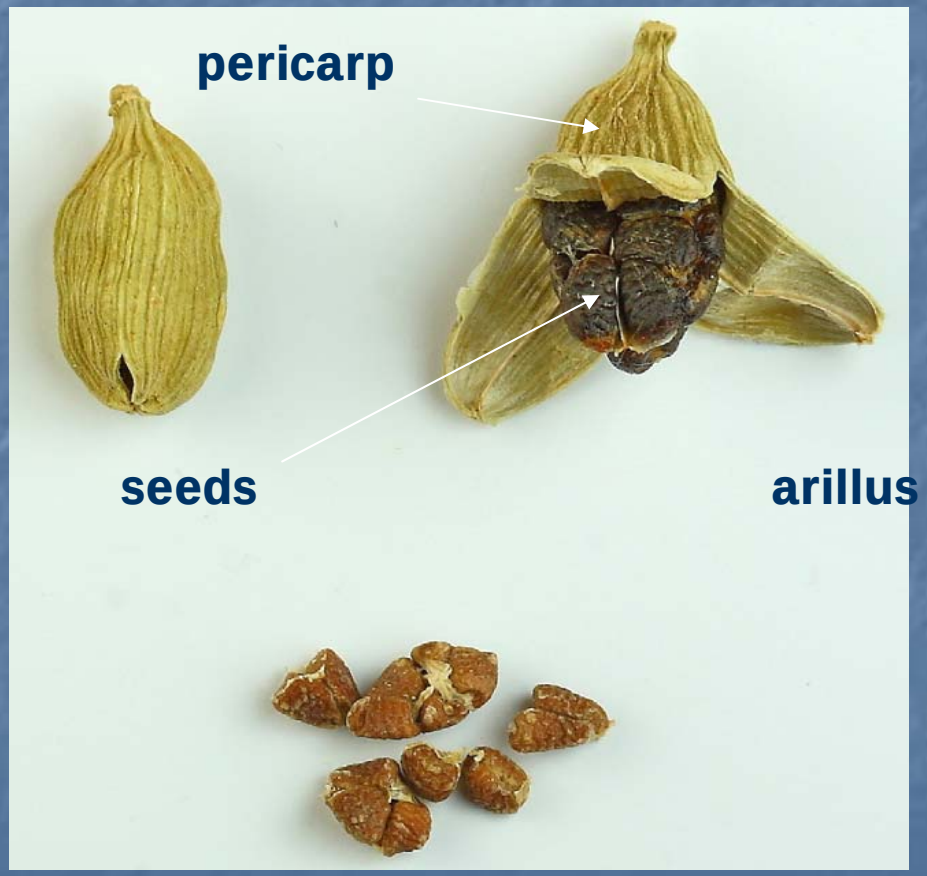
# Sclerids of black mustard

**Shadow of hypodermal cells (giant cells)**

**Sclerids**



# Cardamom fruit & seed



# T.S in Cardamom seed

Epidermis (prosenchyma)

Hyaline layer

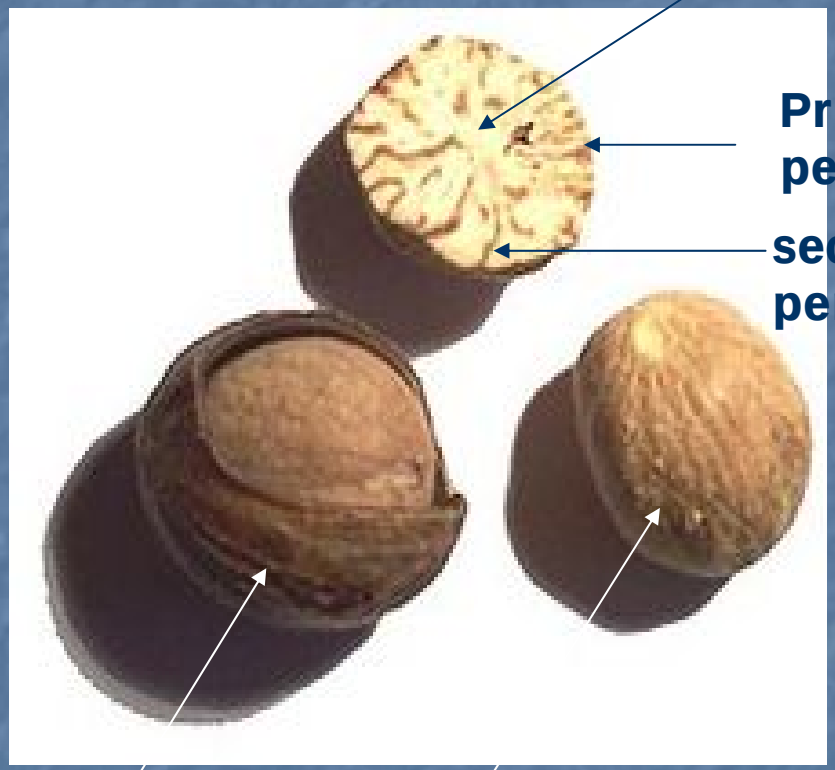
Oily layer

Sclerids layer (showing silica nodule)

Starchy perisperm

# Epidermal cells (Prosenchyma)

# Nutmeg seed and kernel



endosperm

Primary perisperm

secondary perisperm

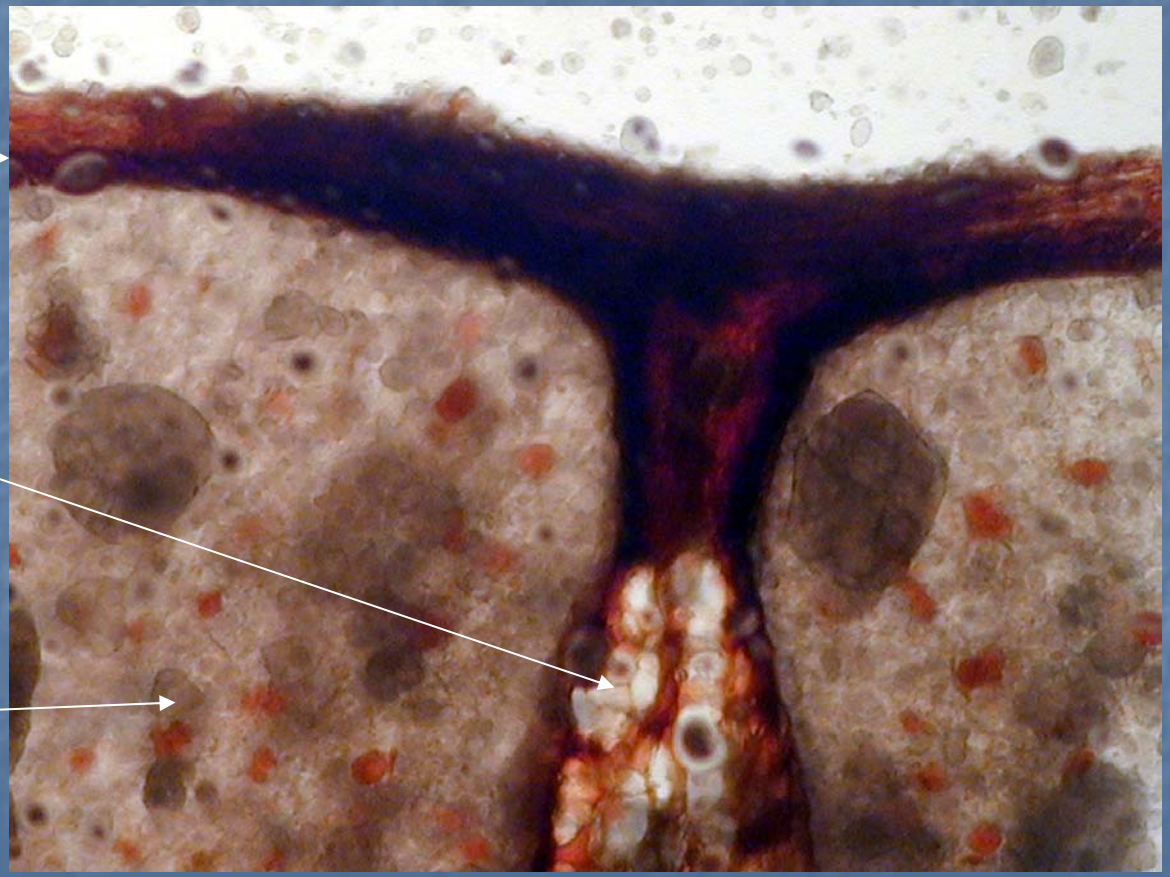
arillus

Fruit

testa

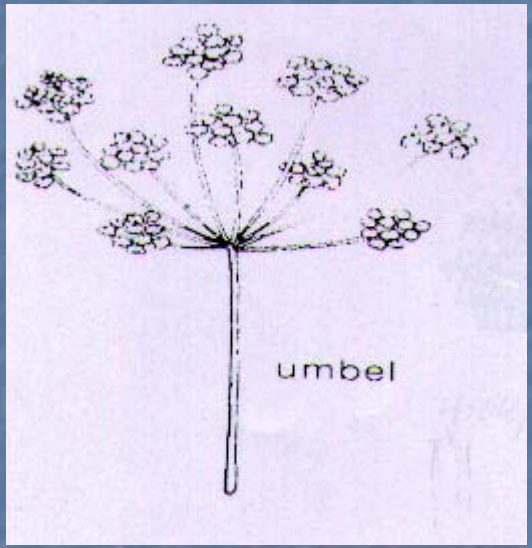
kernel

# T.S in Nutmeg



# 2-Fruits

# Umbelliferous fruits

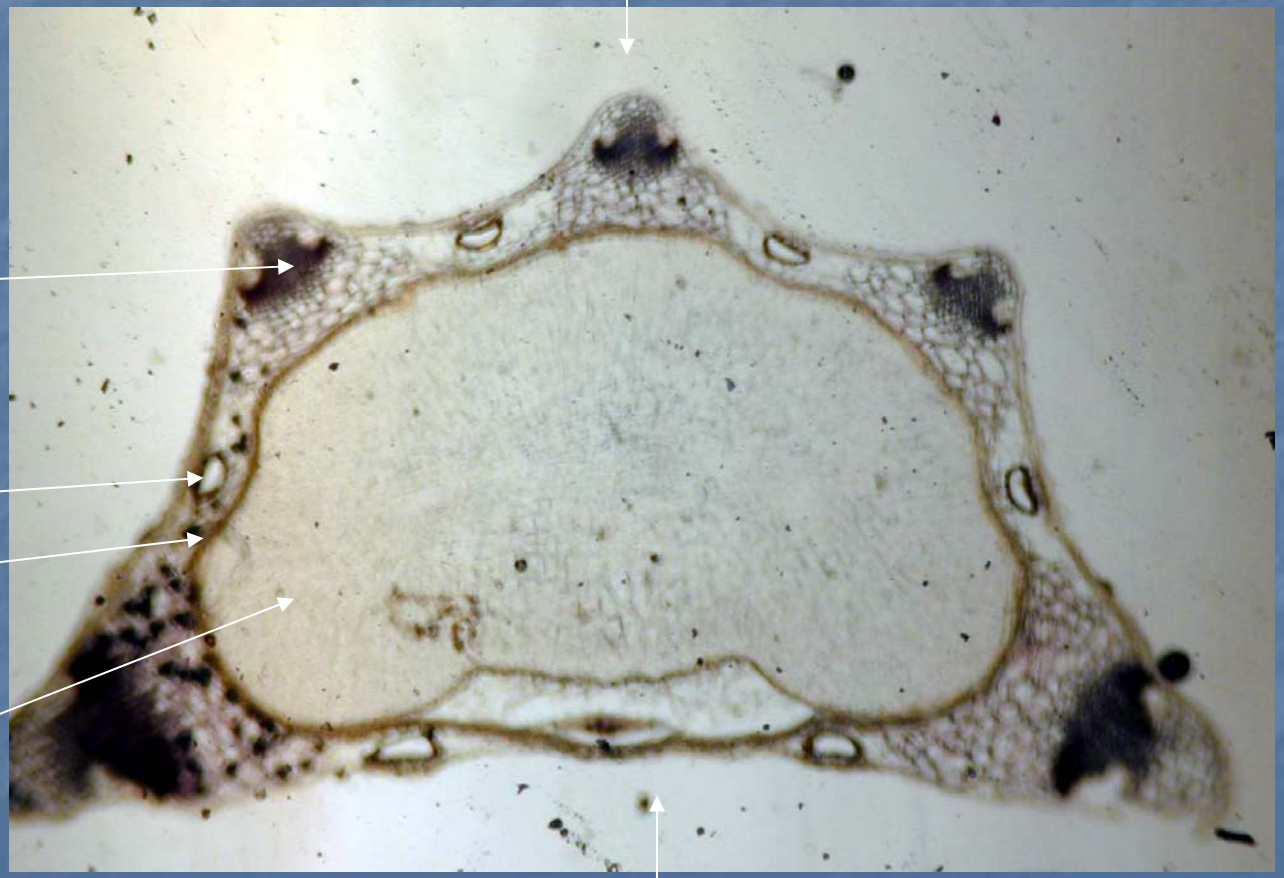



1. Fennel
2. Caraway
3. Cummin
4. Coriander
5. Ammi visnaga
6. anise

# Fennel fruit

# T.S in fennel mericarp

Dorsal side



Bicollateral f.v.b

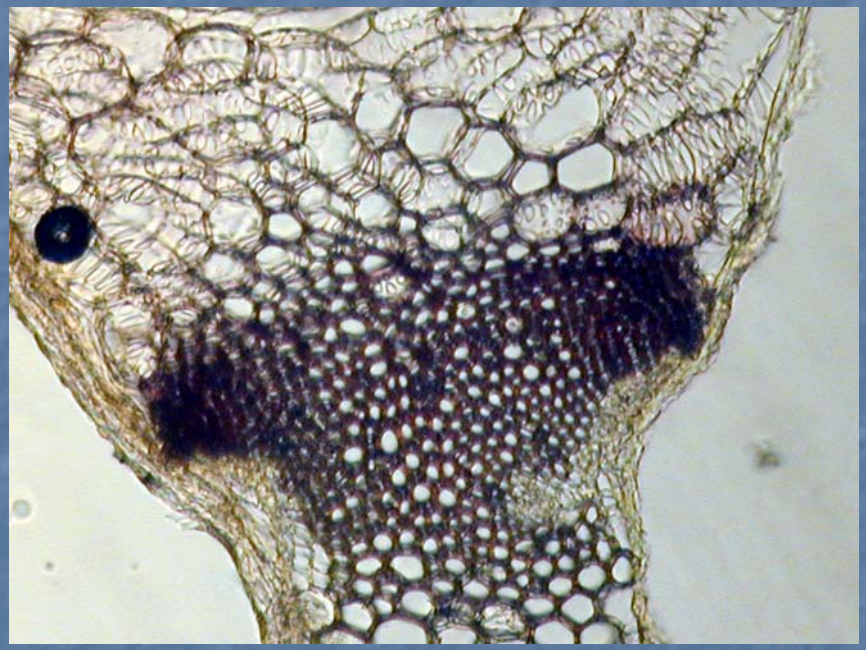
vitta

testa

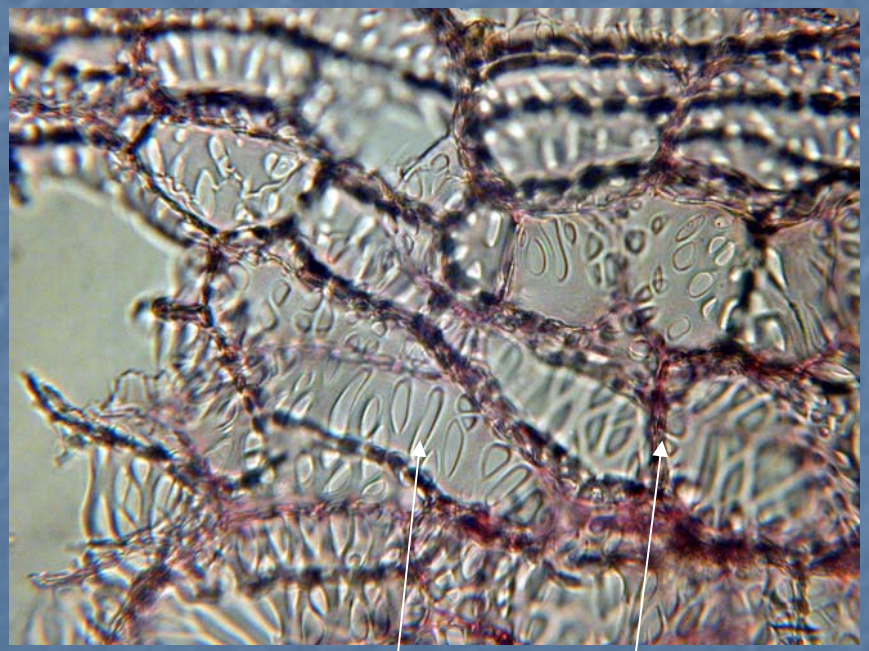
Orthospermous endosperm

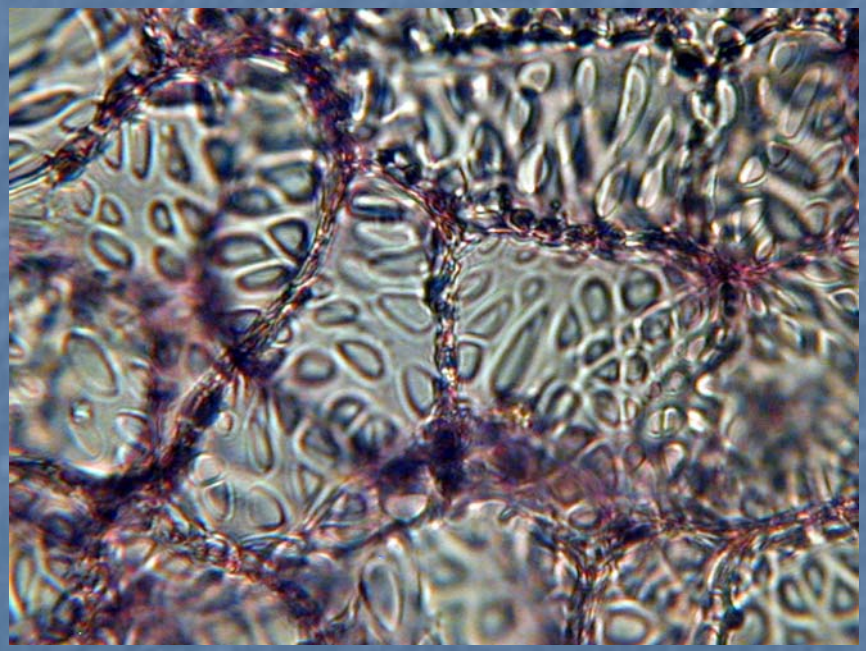
Commisural (ventral) or (flat) side

# Reticulate parenchyma in T.S



# Reticulate parenchyma in powder

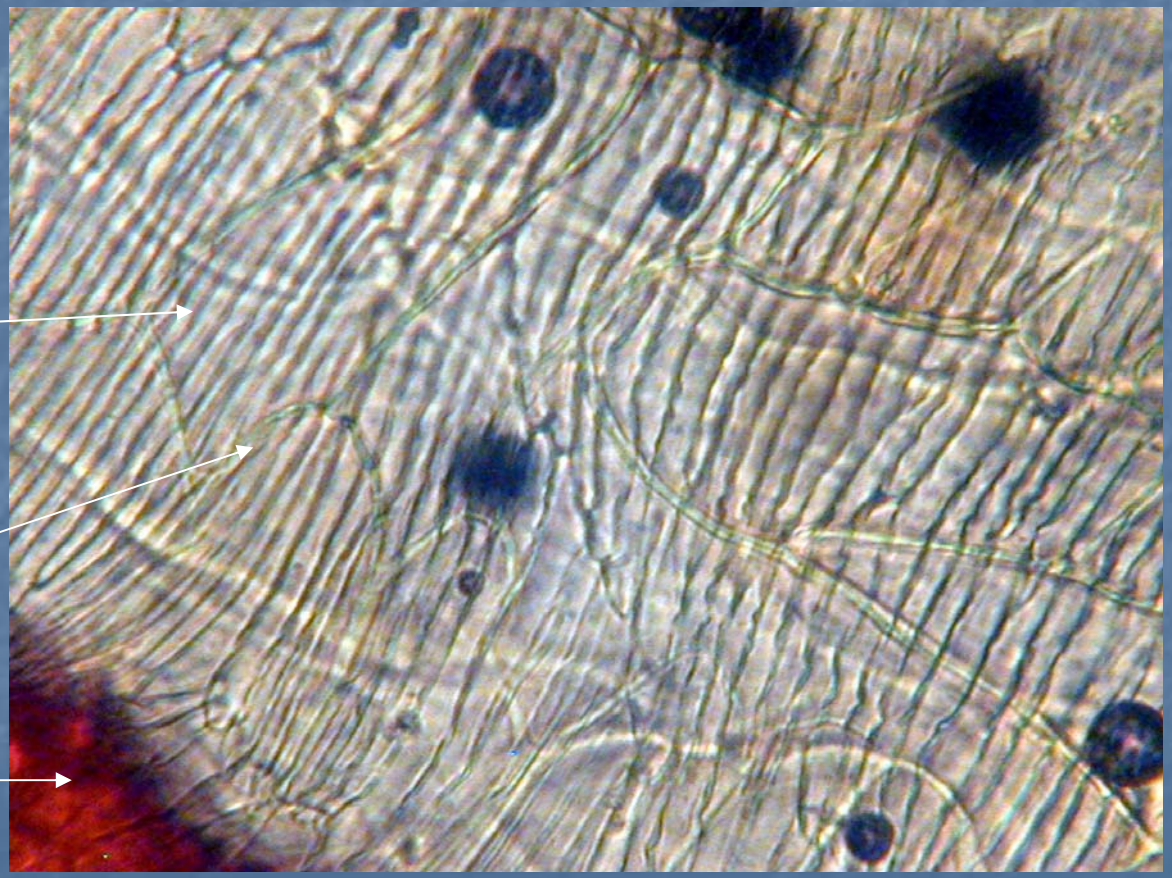




**Oval pits**

**Lignified beaded walls**

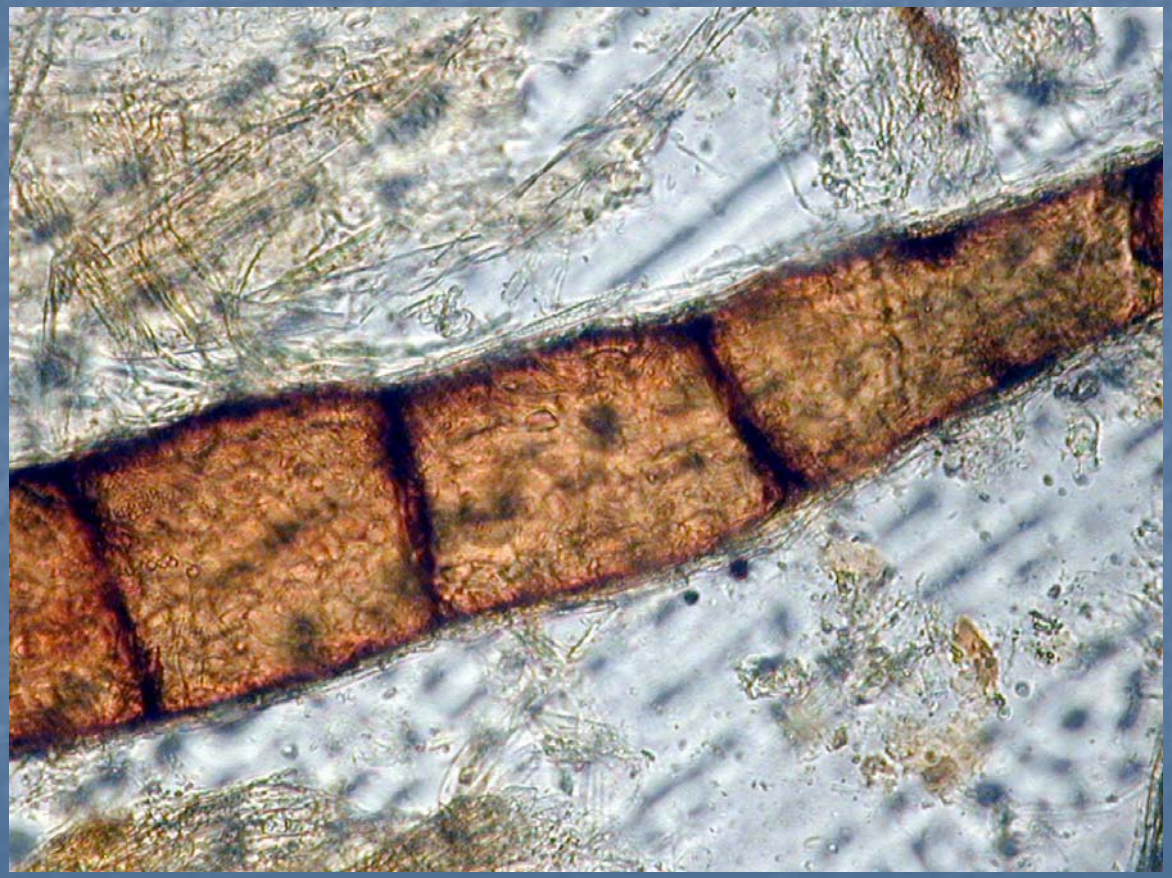
# ENDOCARP (PARQUETRY ARRANGEMENT)



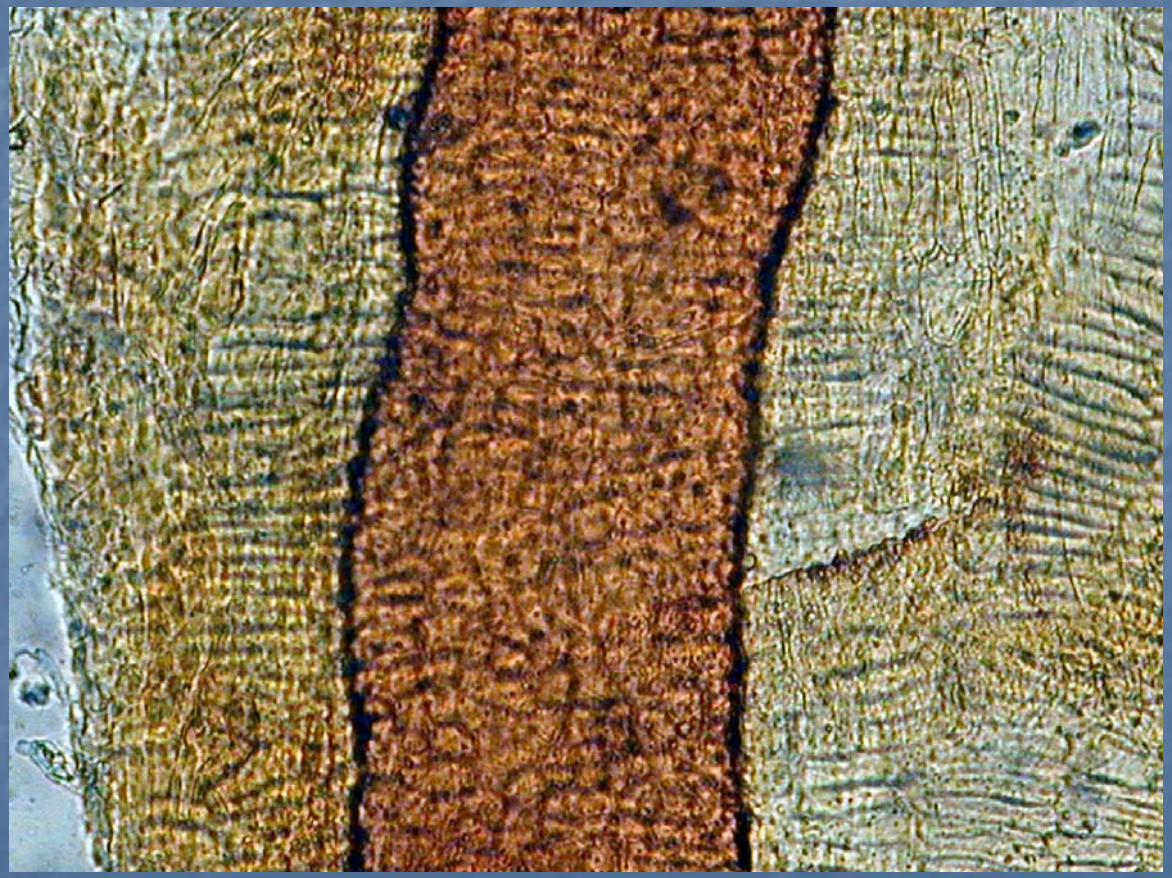
# Caraway Fruit

# T.S in Caraway

# Vitta in caraway

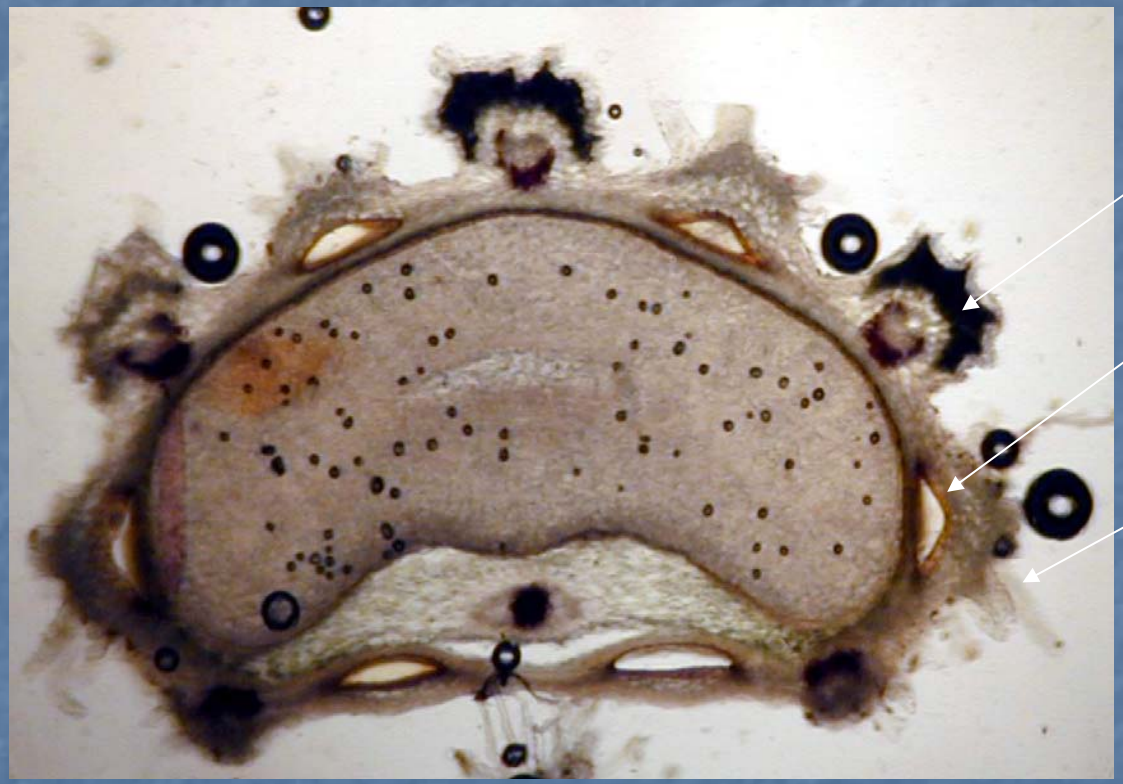


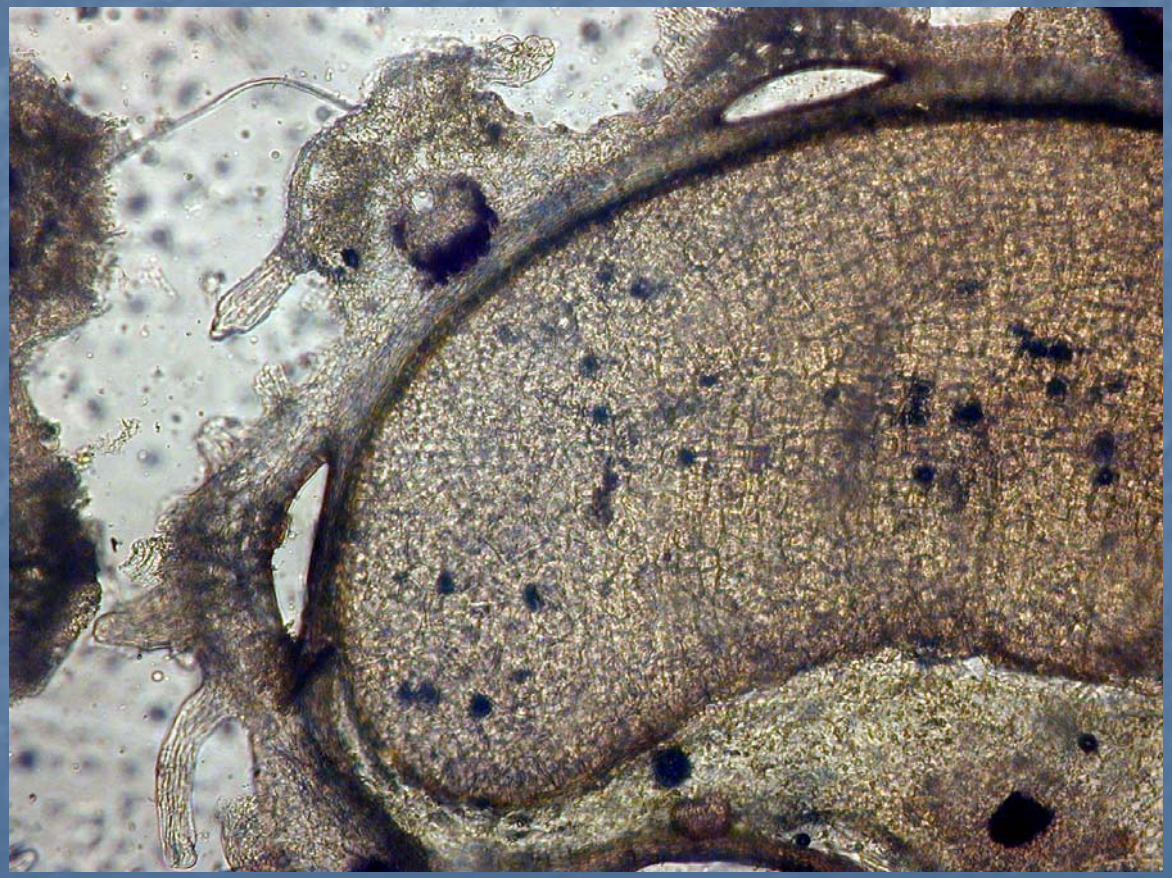
# PARALLEL ENDOCARP in Caraway



# Cummin fruit

# T.S in cummin fruit

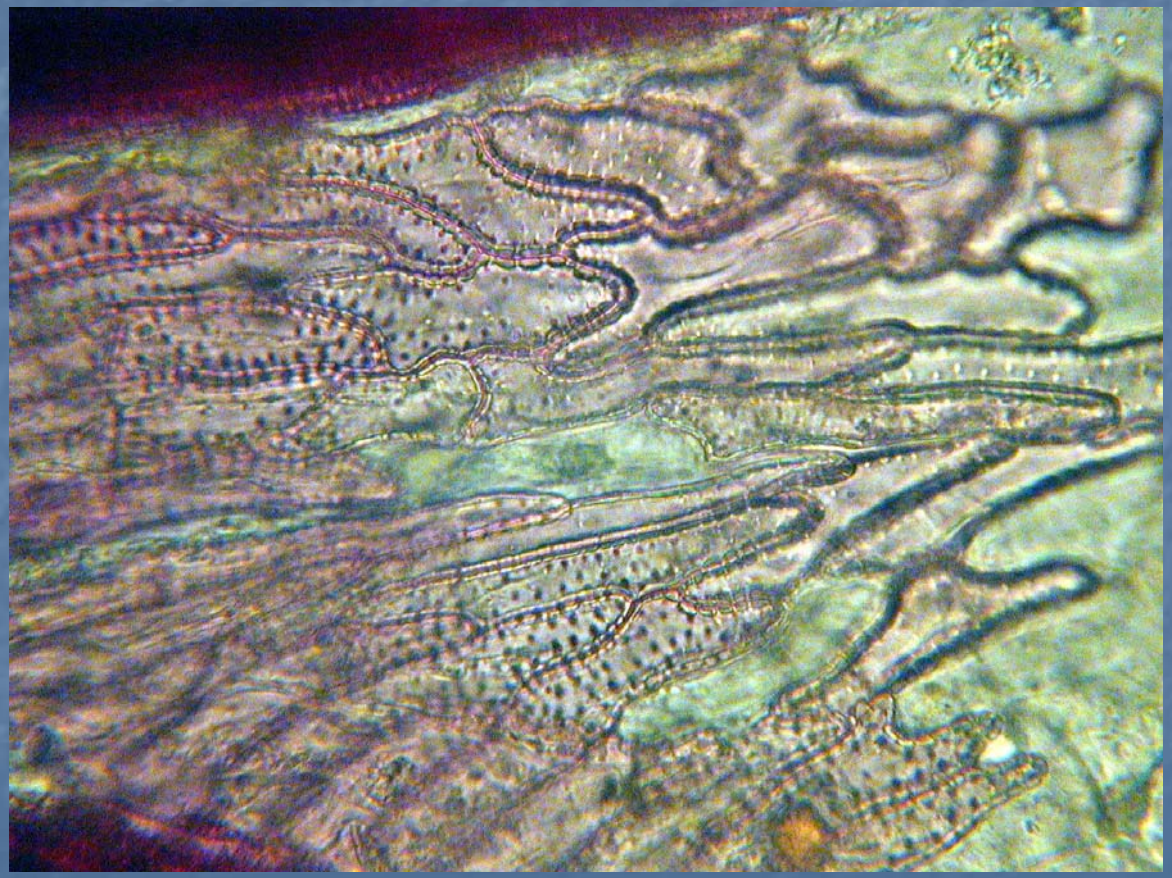




# SHAGGY HAIR
# in Cummin

**Epicarp**

# SCLERIDS OF MESOCARP (LIGNIFIED ,PITTED)

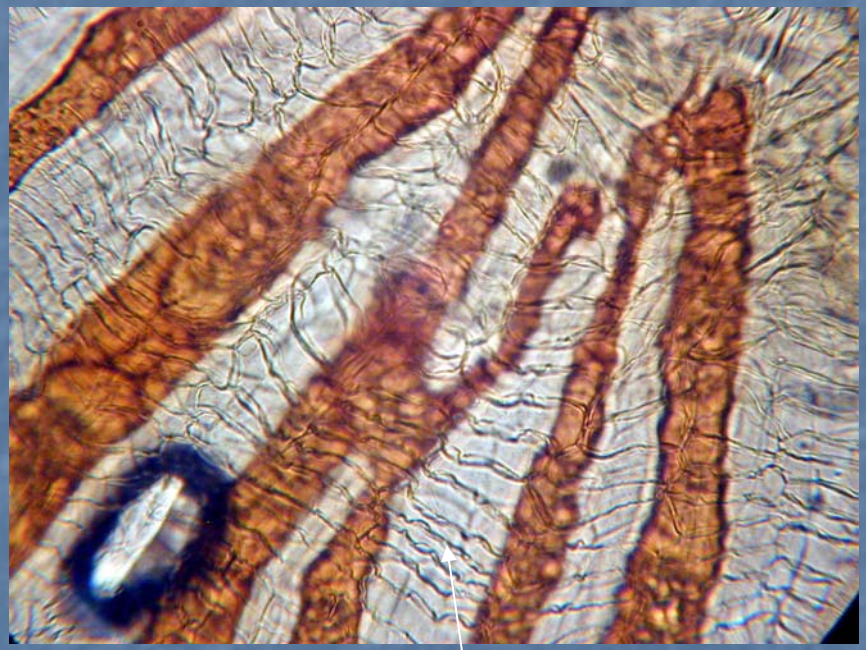


# Anise fruit

# T.S in Anise fruit

Non-glandular hair
f.v.b
vitta
Small vitta beneath f.v.b

# Branched vitta in Anise fruit



**Parallel endocarp**

# Trichome of Anise

**Non-glandular, curved, covered with warty cuticle, tapered apex**

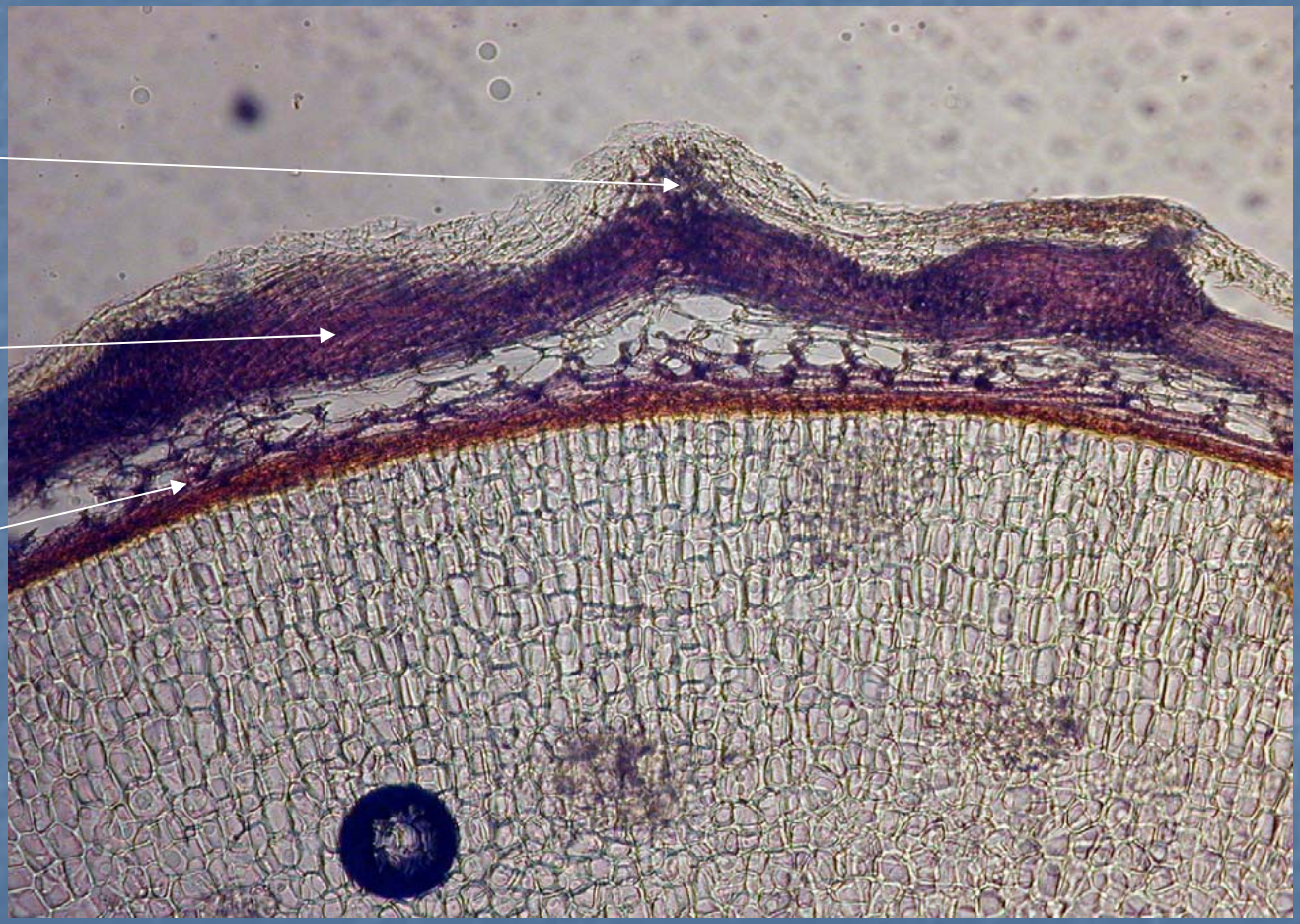
# Coriander fruit

# T.S in Coriander fruit

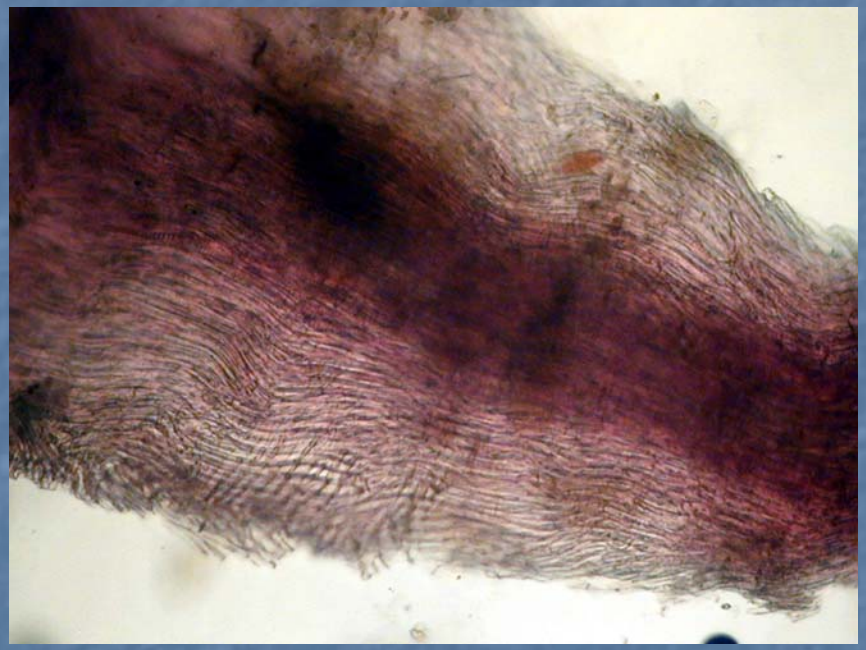
f.v.b

Fusiform sclerids of mesocarp

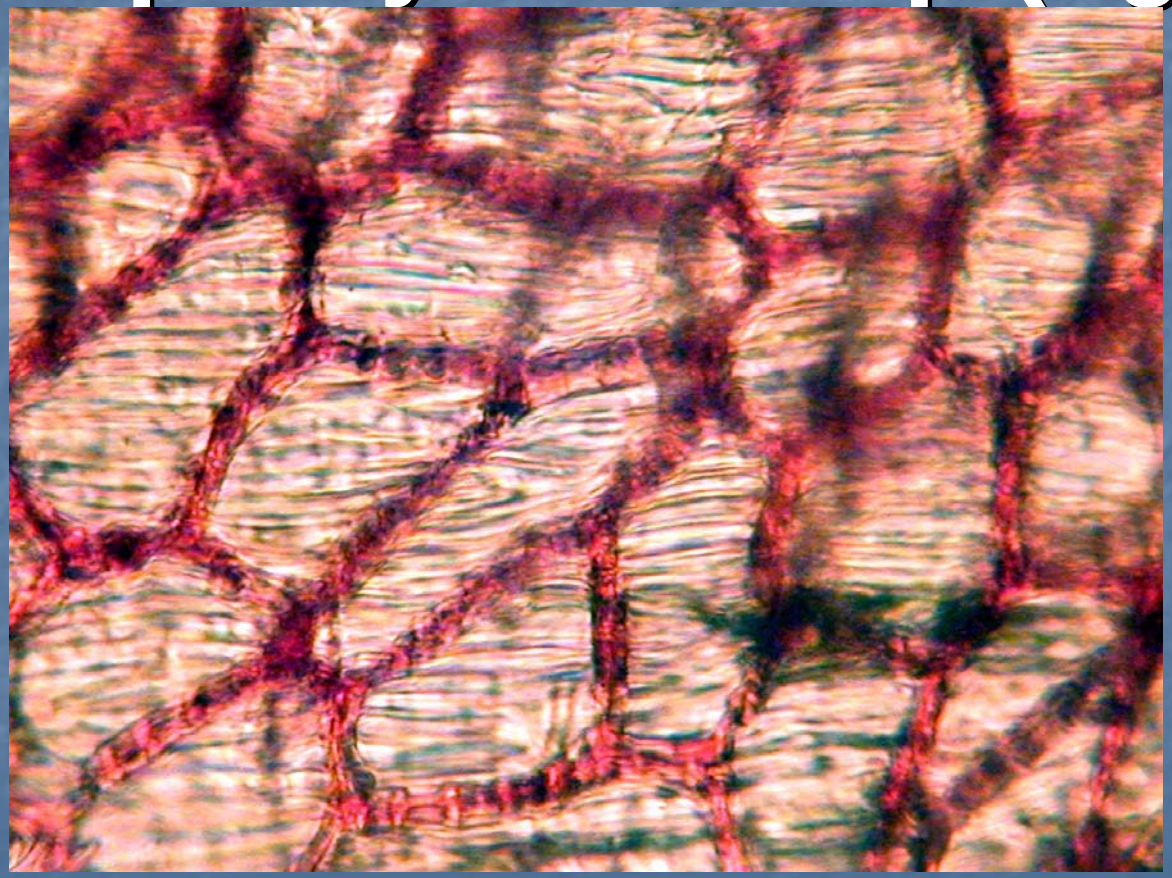
Innermost layer of mesocarp



# Fusiform sclerids of mesocarp

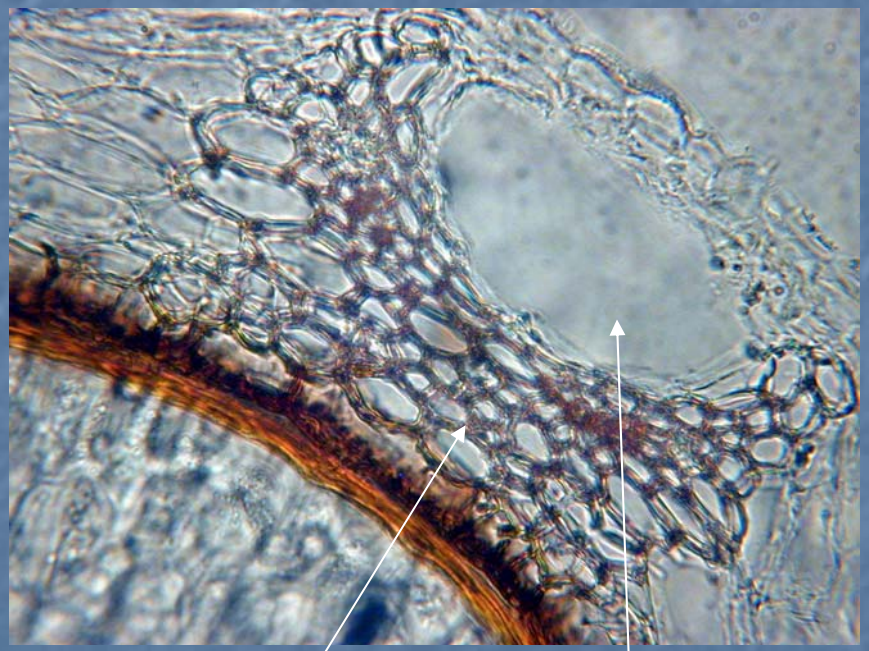


# Sclerids of innermost layer of mesocarp with underlying parquetry endocarp (lig )



# *Ammi visnaga* fruit

# T.S in Ammi visnaga



Crescent shaped f.v.b

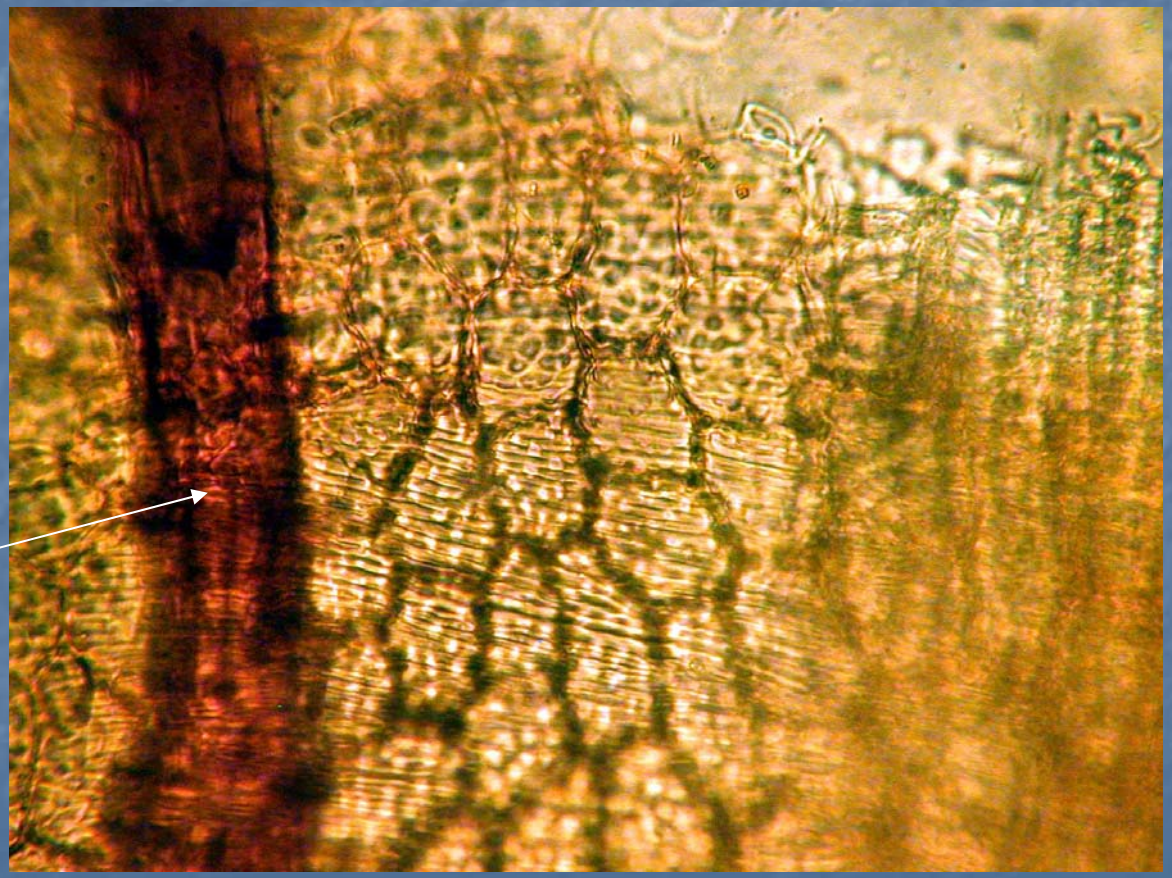
lacuna

vitta

Fan-like structure

# POROUS LAYER

**Innermost layer of mesocarp with underlying parquetry endocarp (porous ,non lig)**



**Part of vitta**

fennel
coriander
caraway
anise
cummin
Ammi visnaga

fennel

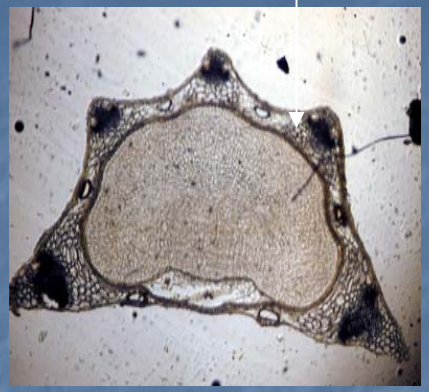
Coriander

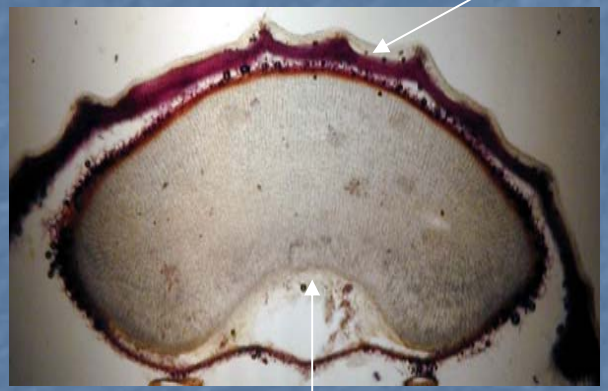
Anise

Cummin

Caraway

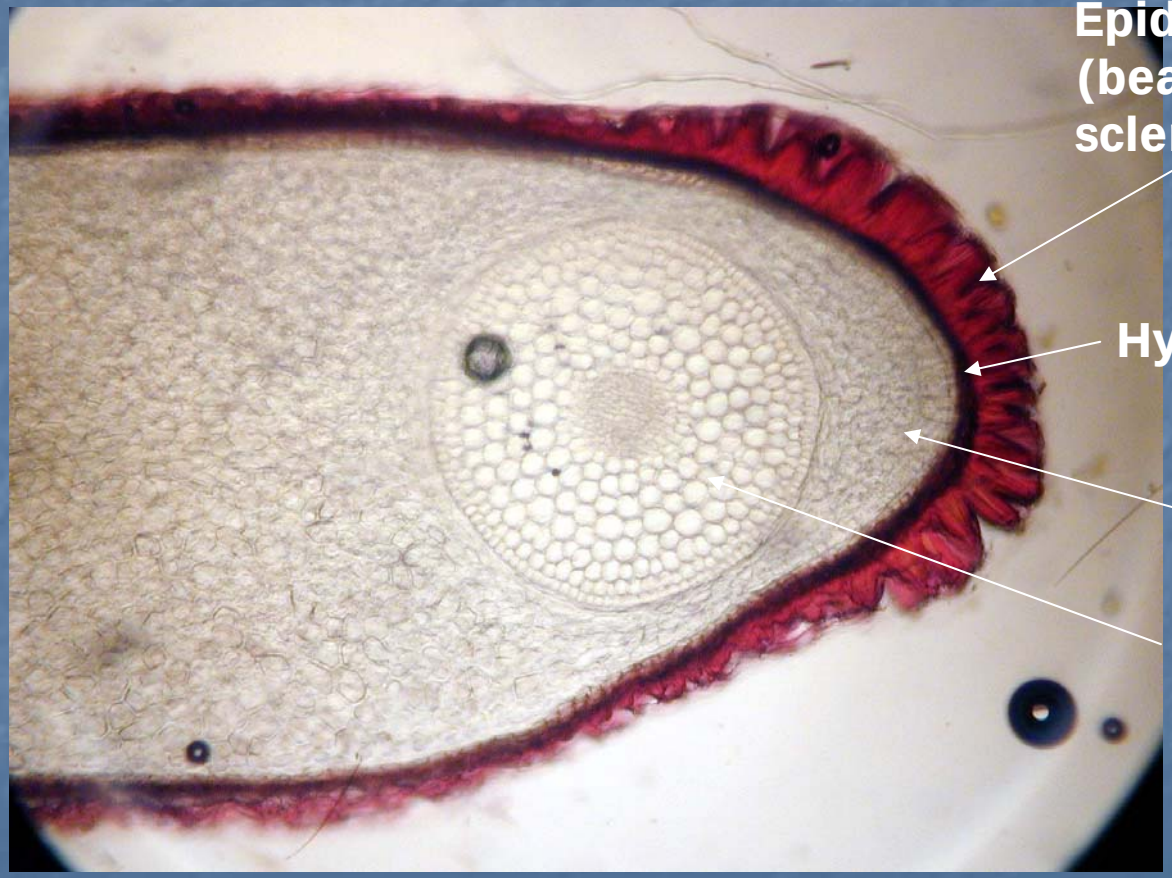
Ammi visnaga



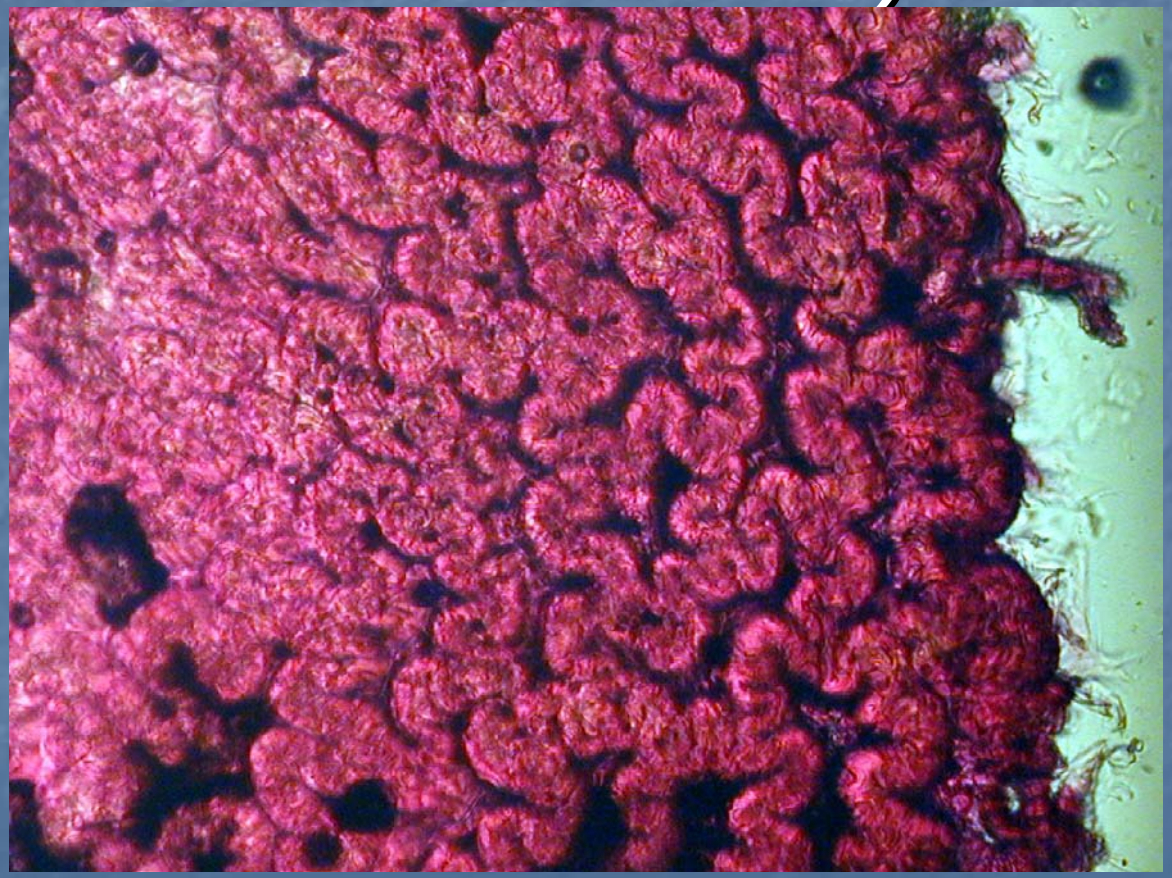


# Capsicum
## fruit

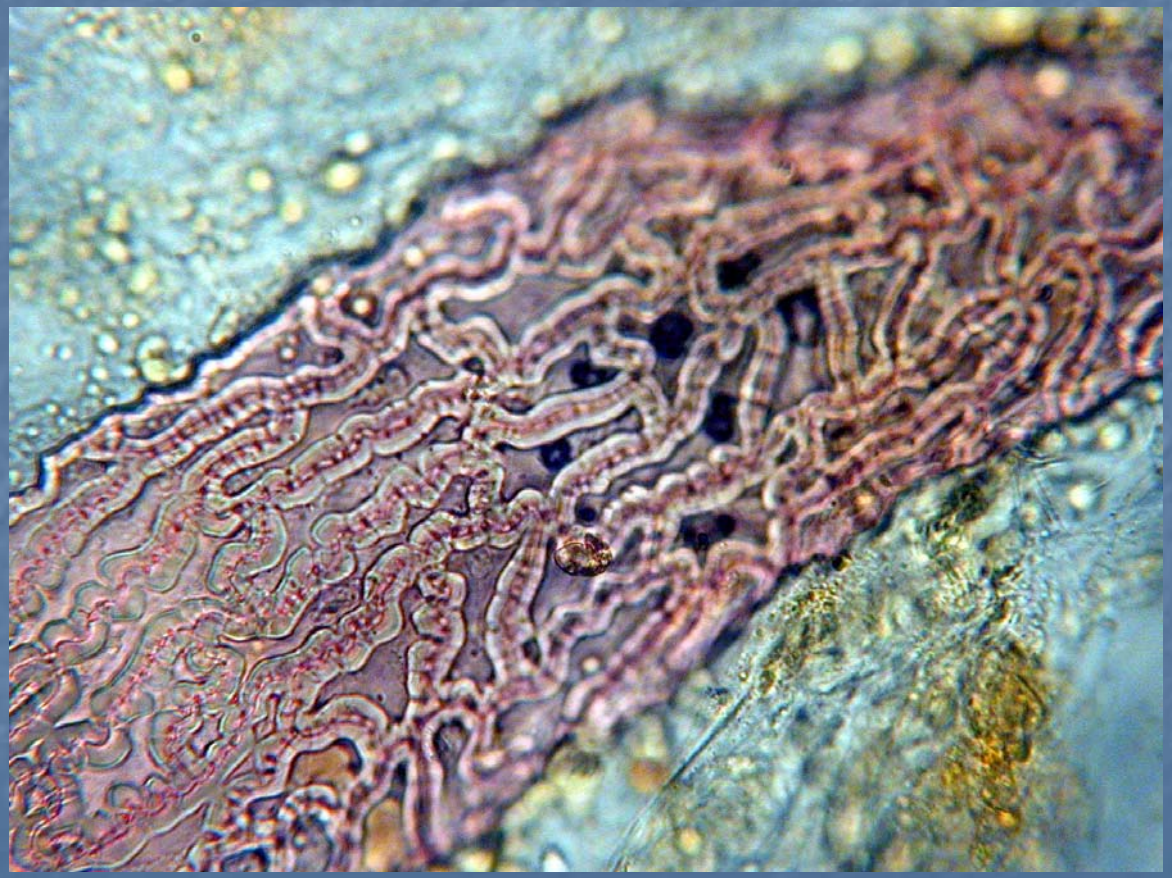
# T.S of Capsicum seed



# SCLERIDS OF TESTA (LARGE SINOUS WALLS ,BALLON LIKE THICKENING)



# SCLERIDS OF ENDOCARP :BEADED WALLS ,LESS WAVY ,LIGNIFIED



# *Black pepper* fruit

**reticulations**

# T.S in Black pepper

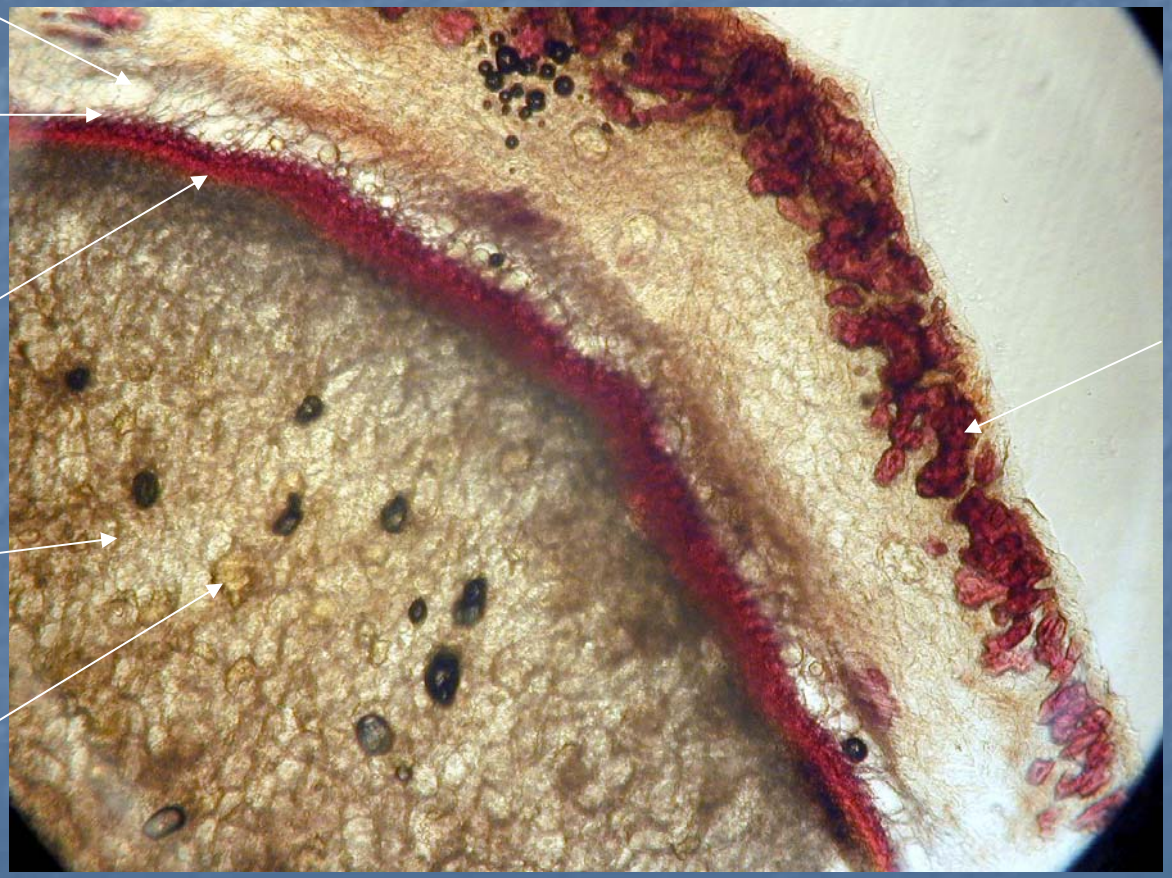
Oily layer

Sclerids of endocarp (continous layer)

testa

Starchy perisperm

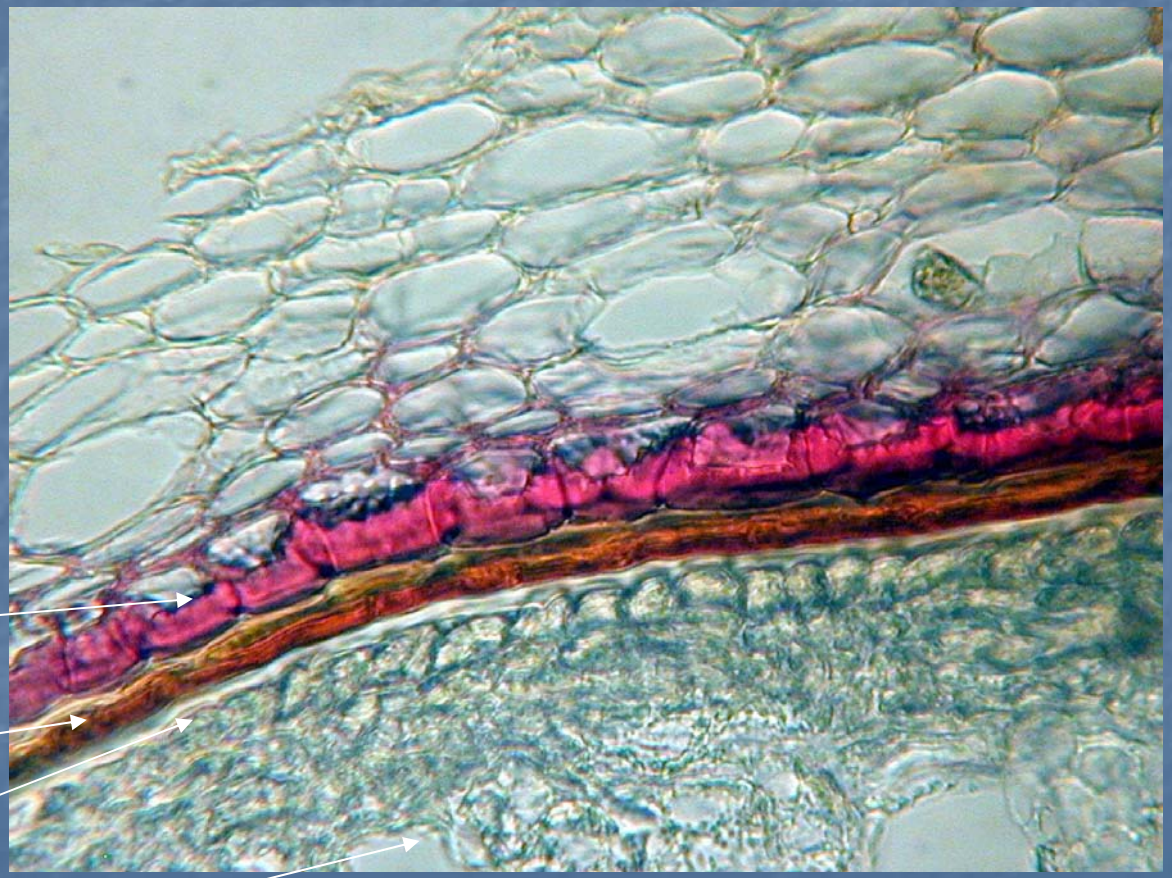
Oleo-resin cell (piperine)



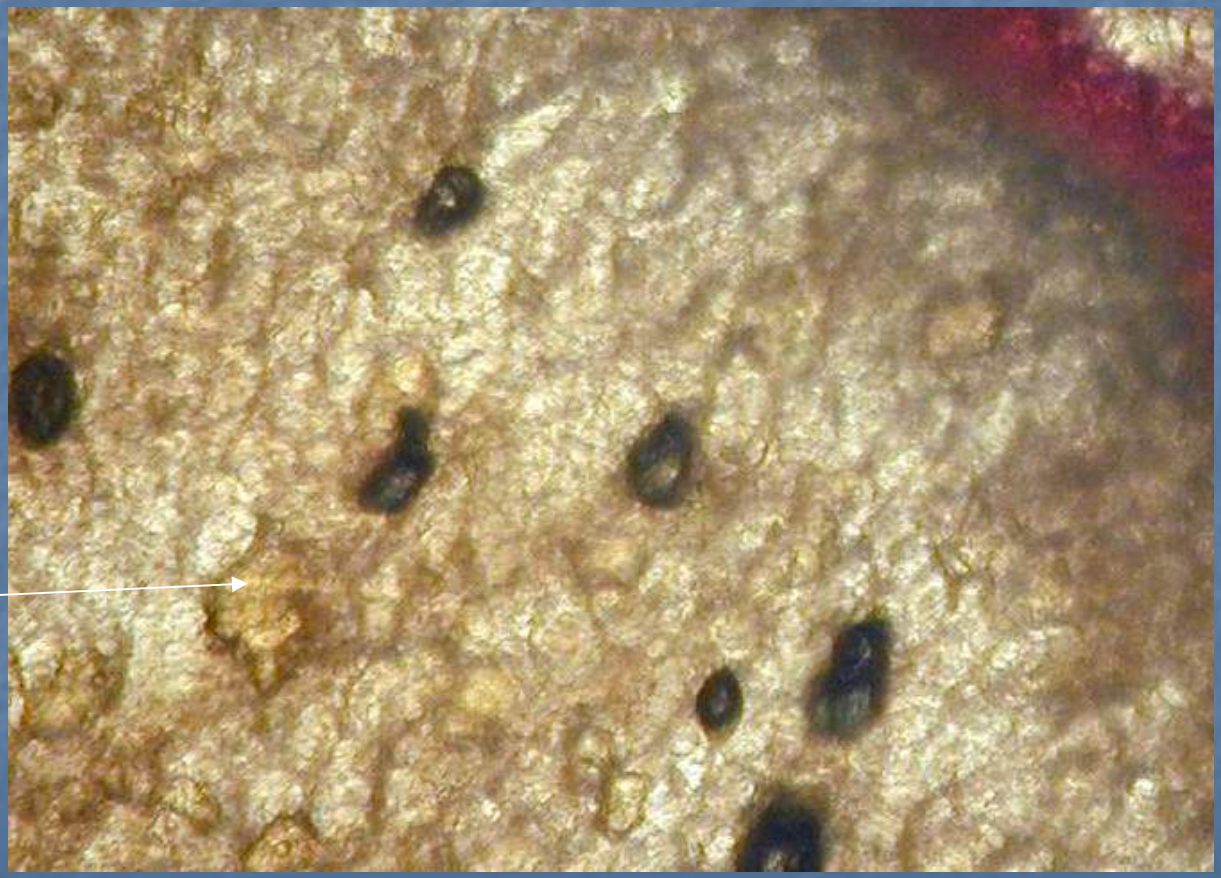
Hypodermis (patches of sclerids)

# Hypodermal sclerids

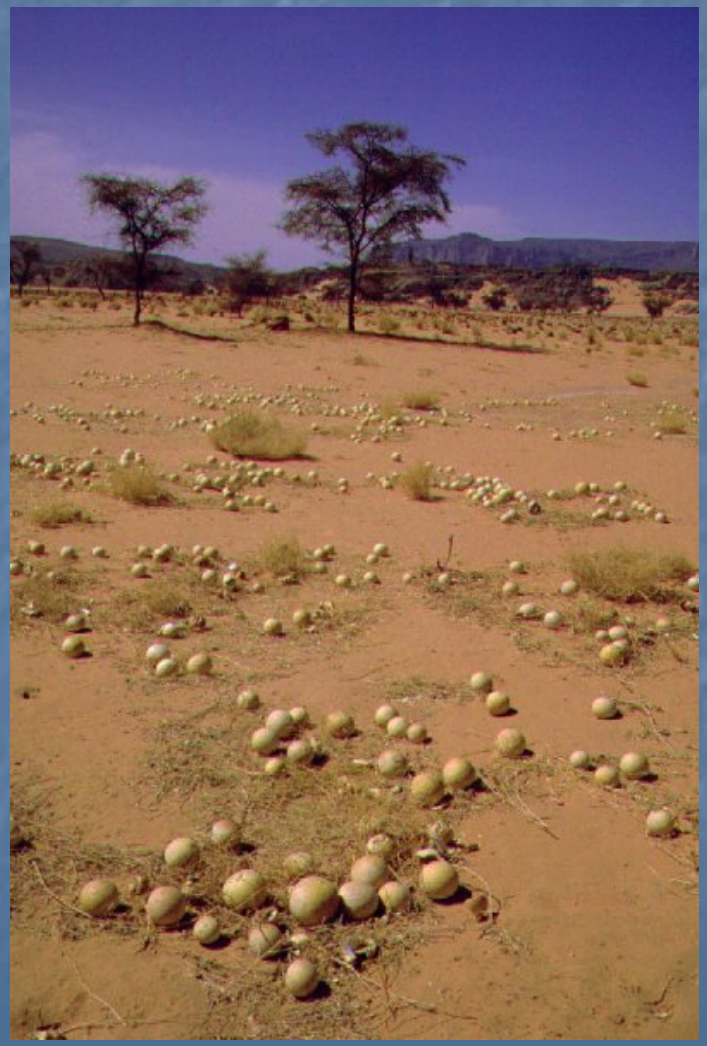
# Sclerids of endocarp (horse-shoe thickening)



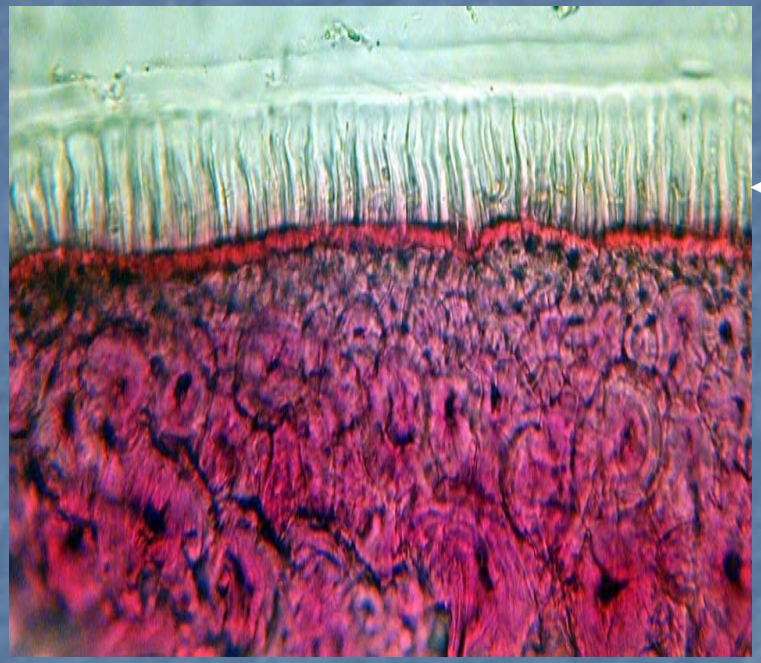
# Perisperm with oleo-resin cells

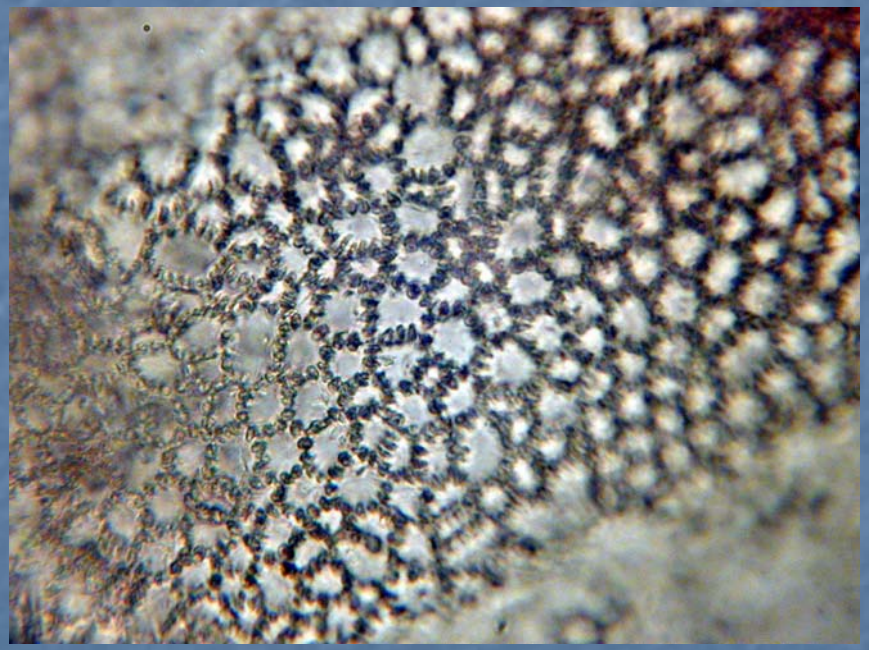
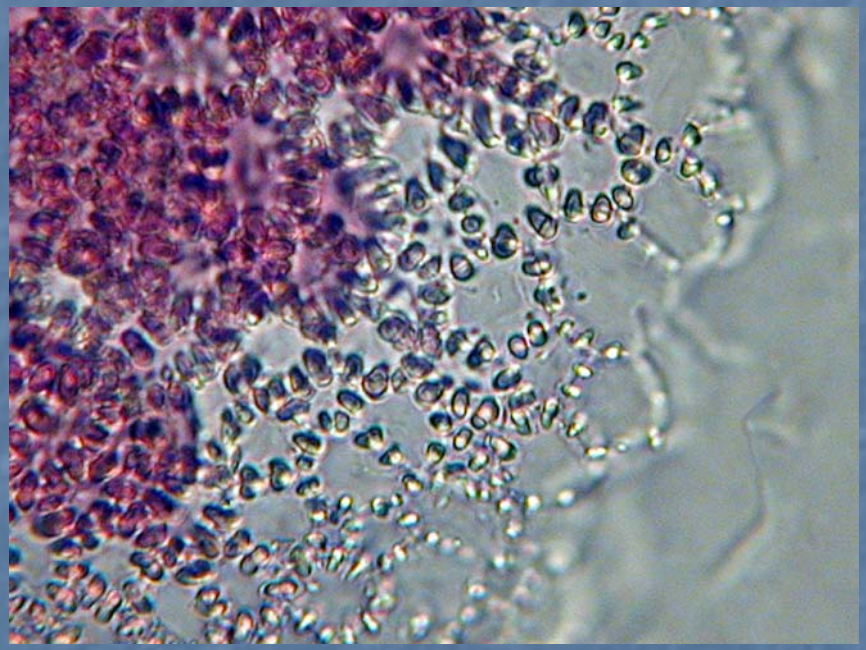


# Colocynth fruit



# T.S in colocynth seed



**Epidermis (palisade like cells with bar-like thickening), flame cells**

# Epidermal cells of colocynth seed (Flame cells) top view